AMERICAN VETERINARY REVIEW.
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EDITORIAL.

LOUIS PASTEUR.

The sad event of the death of the great French chemist took place in the latter part of September, at Villeneuve l'Etang, after a long sickness. A few days previous to his death, it had been made public that a new attack of his former ailment had made its appearance, and his numerous friends began to fear that the end was slowly approaching, a feeling which was, unfortunately, too soon realized.

It is not only a French savant, one of the glories of the French nation, who has disappeared, it is a benefactor of humanity. Both the Old and the New World will mourn Pasteur's death as sincerely as France herself, as there is not a country, no matter how far it may be, that has not benefited in some degree by the discoveries made by this great man—and this universal acknowledgement will be so much more merited that the work of Pasteur is only the starting point of a new era in medical science, which is bound to develop, to increase for the greatest glory of the present century and the relief of humanity.

Almost every branch of science has profited by the work of Pasteur, and if among them human medicine stands at the head, her sister (veterinary medicine) can never overlook the benefits that she has derived and will derive in the future by the application of the discoveries of Pasteur.

If veterinarians will bear in mind the progresses made through these discoveries in the investigations and therapeuty of such diseases of our domestic animals as anthrax, hog cholera, chicken cholera, rabies, etc., these will always bring forward to them the name of Pasteur and place it as one of the most honored of veterinary scientists. The presence of many veterinarians, the representatives of the French veterinary schools among the numerous attendents which followed the funeral of Pasteur are evidences of the appreciation of French veterinary medicine of the value of the work done by him.

NOT AN AMERICAN CITIZEN.—"On the contrary, can the REVIEW deny that one of its editors, *not an American citizen*, did not use endeavors to interfere with the recent legislation at Albany."

Such are the expressions published in the September issue of the *Journal of Comparative Medicine and Veterinary Archives.*

This is such an erroneous imputation that I feel it a duty to myself and my past professional life to most emphatically deny it.

At the first congress of veterinarians, held in Chicago, in a paper that I presented there, I urged, in a national point of view, almost all that is contained in the law recently passed in Albany (see A. V. R., Volume XVII, Pages 594 and following).

Later on, at a meeting of the New York State Veterinary Medical Society, I said:

"The creation of a board of examiners is a matter that I cannot too strongly indorse. I have on previous occasions, and in various papers, pointed out the importance I attach to the existence of such a board, and if I erred in calling for a national board, overlooking, as I did, the difficulties that exist in the creation of such a body through the fact of State rights, I am perfectly satisfied to see the plan started to-day in each individual State, until the moment has come when the importance of the veterinary profession will have been proved so powerfully as the guardian of our national agricultural wealth, the Federal government will then take hold of it in the proper way and make it one of its national institutions, as it is in the old world.

"The conditions of admission to examination before the State board form the most interesting part, however, of the bill to the future veterinarian and to the existing places of education.

Section 176 of the bill reads:

The Regents shall admit to examination any candidate who is more than twenty-one years of age, of good moral *character*, *has the general education required in all cases after July* 1, 1896, *preliminary to receiving a degree in veterinary medicine*, *not less than three full years*, and has received a degree as veterinarian from *some registered* veterinary school.

"Those requirements read all that we have been asking for, in fact all that which imposes itself upon veterinarians and upon veterinary schools of repute, that which must necessarily be carried out all through the country in a very short time.

"It means for us a perfect indorsement of our remarks and of our propositions made in Chicago before the members of the first veterinary congress of America held last year. It means all obligations for every one who shall intend to practice in *this State*, to obtain certificate of qualifications and of registration; it means no more imposition on the part of the easily obtained graduation from any school from any part of the world, it means death to quackery, it means the elevation of the veterinary profession to its proper pedestal."

With such a past behind me, I will ask, if, with the exception of the anonymous person who wrote the article for the *Journal of Comparative Medicine and Veterinary Archives*, after my well known exertions of thirty years in behalf of the elevation of veterinary science in the United States, there is one veterinarian in the country who would accuse me of such action as that referred to?

I am not a politician—I have no friends in legislative halls—I have no one to pull wires *pro* nor *con* upon any legislative measures—I am only a veterinarian who has devoted his life to the veterinary profession in the United States—but it is true I am *not an American citizen.*

My anonymous critic seems to have forgotten that science has no country, no *patrie*, though scientists may have.

In conclusion, I will say that I feel proud of the passage of the law, and claim that instead of interfering with it I was one of the first to cause its enactment.

A. LIAUTARD, M.D., V.M.

A PROTESTATION.

PARIS, August 1, 1895.

Prof. Olof Schwarzkopf, V.M.D., Chairman of Executive Committee, Association of Veterinary Faculties of North America:

DEAR SIR:—I have received your letter of July the 13th, with the programme of the next meeting of the "self-named" "Association of Veterinary Faculties of North America," doing me the high honor of "either approving, altering or suggesting, as I may see fit." I thank you for the compliment, and though I know well that I am pleading for a lost cause, and that it is simply . . . . foolish for me to hope that my efforts to carry their point, notwithstanding these expectations, I will permit myself to take advantage of your invitation, not to approve, alter or suggest the programme, but simply to call *your* attention, that of the *members* of the Association of Veterinary Faculties of North America, and, above all, that of *every*

member of the United States Veterinary Medical Association who has at heart the name of the Association, her reputation and her welfare, to only one point—that is, to the

UNCONSTITUTIONALITY OF YOUR ACTIONS,

and if I am not going to approve, alter or suggest on the programme, what I intend to do is to ask you to stop where you are, Mr. Chairman, and to tell you and your colleagues of the Association of Veterinary Faculties of North America:

Stop! or, rather, *begin over again!*

Yes, *stop*, because you are illegal!

Yes, *begin over again*, because the work that you may do, the subjects that you may consider, the laws or regulations that you may enact, will all be thrown away uselessly, because it cannot be entertained; because, remaining a dead letter, it will do no good to the noble work you intend to do, no good to the great reform that you will attempt to bring out; because in this land of liberty arbitral actions are illegal; and because, if your existence may serve personalities, it will do no good to American veterinary medicine.

What you may say is, "Is it Dr. Liautard who speaks thus?" "Is it he, who, at the first Veterinary Congress of America, expected what he had on previous occasions urged in his paper on 'Veterinary Education; As It Was, As It Is, and As It Should Be?'" "Is it he, who, before the New York State Veterinary Medical Society, presented an address to the same effect?" "Is it he who tells us to stop when we are about considering the reforms which he has so urgently asked of us, and which, should they be brought to effect, would crown his professional work in behalf of veterinary medicine with the most glorious reward?"

Yes, it is I! and why?

Mr. Chairman, let me ask a single question: *By what authority does the "self-named" Association of Veterinary Faculties exist?*

It may be answered, by direction of that great Association for which we all work, by that great body of veterinarians who for years have endeavored to elevate the profession, and have succeeded. Right! I grant that it became a duty for the United States Veterinary Medical Association to ask the formation of the Association of Veterinary Faculties of North America, which I have myself asked for, and which I ask for again.

But—and here are my objections to her existence, to her right of existence, to her legality—and, if I am right, I say and I repeat: *Stop where you are and begin over again.*

That which I am now going to say I wanted to say last year at the meeting at Philadelphia. Landed but just a few hours from a trip across the Atlantic, and finding my inability to be at the meeting before action was taken on the report and discussion on the new-born society, I had telegraphed to my friend, Prof. Robertson, to ask for a short recess, a brief delay, to allow me to arrive from New York. This request was denied, and I just entered the room to hear that the child was born—*a child doomed to death from its birth.* What I wanted to say at the meeting I told you, Mr. Chairman, in Philadelphia, and my remarks at that time you seemed to approve.

What were these remarks? They were imbedded in the following words, or

about, viz. : "*That the Association of Veterinary Faculties of North America was not properly organized; that the fact of a* FEW *persons engaged in teaching in* SOME *of the veterinary colleges of North America being asked to unite for the purpose of organizing, had no value; that the only proper way to have the organization possessed of a solid standing was to have the* OFFICERS *of the colleges notified of the project in view, and they to delegate professors from their faculties to represent each individual college.* Speaking of *officers* of a college, I do not mean the teachers, the professors, nor the dean, nor the principal. I mean the *board of directors*, the *board of trustees*, the GUARDIANS of the charter, which is the life of a school.

WAS THIS DONE? If it was not, I say it again, *Stop and begin over again!*

You know, Mr. Chairman, it was not done.

Instead of that which, in my humble estimation, ought to have been done, what did take place?

With, perhaps, some slight errors of no value, I know it was thus: NOTICES were sent to SOME, to very few, not to all, *not to every member of* SOME faculties.

Was this correct? Why to a few only? Were these few the masters of all? Why should they be invited to assume certain powers, when only those who had that power did not delegate them to assume it?

These notices mentioned the intention to have a meeting to organize at the annual gathering at Philadelphia. Some were present, others were absent (I, unfortunately, among those). The organization took place, officers were elected, and, as I said, the *child was born in a hurry, a premature delivery*. Afterwards notices were sent to those who had been elected members of the Association; they were placed on various committees, and to-day you prepare, yourself, the second act of that which, should not the subject be so important, and should I not fear to indulge in personalities, I would call *a farce, a comedy*.

Of what value can be the decision resulting from the discussion of the subjects on "Prescribed Entrance Examination;" on "State Boards of Veterinary Examiners and their relation to Veterinary Colleges;" on "Uniform Degrees;" on "Competitive Examinations for Veterinary Faculties," with an amalgam like that which composes your organization, viz. :

1st. *Representatives, mostly all, without sanction, authority or power to represent.*

2d. *Representatives of two and three year schools.*

3d. *Representatives of private institutions and of colleges attached to universities, as departments;* and

4th. In the presence of schools which exist now and are not represented in your Association of *faculties*, and, still more, who are not represented in the mother national body.

Mr. Chairman, the work that lies before you seems to me very simple, and can be performed at once, without anyone fearing that his pride has lost any of its right. *You recognize your illegal organization, and state so to the Association.* You ask power to continue your work as a committee, not as an association, and then *begin over again* in obtaining your OFFICIAL appointment from the trustees and directors of the various places where veterinary education is carried out. You can then reorganize later on, and be prepared to enter into the performance of your work "*as it should be*," and with the certainty of receiving the approval and support of every member of the profession.

Mr. Chairman, I am miles away from Des Moines. On account of unavoidable circumstances, I am once more unable to be at the meeting of the National Society, and must trust to writing that which I fear can scarcely be communicated, as it should be, except by *one fully convinced.* Have I succeded in giving you, or any of your colleagues, *that conviction?* I hope I have. And, if such is the case, I shall be grateful to all of you to have listened, not to my words, but to the laws of rightfulness and equity; and, if you permit me, I will then renew my efforts, offer my services for the cause in question—the elevation, the perfecting of education in *American Veterinary Institutions.*

Yours truly,

A. LIAUTARD, M.D., V.M.

The above speaks for itself. It will be seen from it that the writer has never made the attempt to prevent the work nor the stay of the association referred to.

The reasons laid down by him may not be correct, he may be in error, but he has the firm belief that he is not—a belief based upon personal verbal assurances. That the Association of Veterinary Faculties of North America "has come to stay" he certainly hopes; that "it will grow stronger day by day" he also believes; that it "will outlive the charges and attacks and calumnies of any one man" he doubts not, as he does not know of any one who wishes its death; that "it will not stop, nor dissolve, nor begin over again," he does regret. If his remarks were correct, he is quite certain that the *reclame* which has been made for her in a pretentious and bombastic manner by a critic of the protestation, has missed his objects, overreached himself, and by its tone prevents any further consideration at our hands. The motives of the protestation were good, and if they were erroneous, they were not ridicule—they certainly were not valueless (by the written acknowledgement of several), and, as such, at least ought to have received a gentlemanly consideration.

PENNSYLVANIA STATE BOARD OF VETERINARY EXAMINERS.—Dr. W. L. Rhoads, of Lansdowne, Pa., writes us that the Governor has made the following appointments on the State Board of Veterinary Medical Examiners: for three years, W. H. Hoskins, S. J. J. Harger; for two years, J. C. McNeil, Harry Walters; for one year, J. W. Sallade. They have not, as yet, received their official notice, but it is understood this is to be the board.

ORIGINAL ARTICLES.

THE THERAPEUTICS OF COLIC.

By W. L. Williams, Veterinarian to the Agricultural Experiment Station, Bozeman, Montana.

Paper read before the United States Veterinary Medical Association.

The term colic has been made to include a variety of diseases of the abdominal organs due to widely dissimilar causes and possessing but one common character, that of abdominal pain, having its origin in some portion of the digestive canal.

This grouping of a number of diseases under one term is partly necessary because many of them cannot be clearly differentiated during life, although each have characteristics in a measure peculiar to themselves which may lead to a probable or even positive diagnosis.

Statistics indicate that ten to twenty per cent. of horses affected with colic die, and that forty per cent. of the deaths of horses are due to this affection. These statistics appear to be largely from city districts, hence apply to work horses. In breeding districts these figures are probably entirely too high.

The difficulty of safely identifying the various diseases of this group tends unconsciously to lead to the empirical treatment of the entire group by a common formula, regardless of specific indications offered by each individual case. Under these conditions we find the treatment of colic unsatisfactory.

The Munich Veterinary School (Friedberger & Frohner Lehrbuch d. Spec. Path. u. Therap. Vol. I, P. 162), has shown that an apparently greater per cent. of colic cases recover without than with medication. Have we not permitted empiricism to displace rational medicine to an unjustifiable degree?

The conclusions of the Munich Veterinary School are applicable to several veterinary colleges in our country and to the practice of many veterinarians.

During my first years in practice, when I followed trust-

ingly the methods dictated by authors and teachers, my losses from colic were appalling, costing me many anxious hours and valued patrons, but as necessity and reason drove me farther and farther from what I thought classic methods and taught me a higher appreciation of nature's powers and her abhorrence of unnecessary meddling in disease, my losses became very much less.

If we are to handle colic without violence to natural methods we must apply to it greater knowledge and judgment than to any other internal malady. The confusion in its treatment is shown by the endless number of remedial agents used without any apparent order. One will have the patient lie, another stand, another walk, or trot or run.

One relies on anæsthetics, another on sedatives, another on stimulants or carminatives, another upon astringents, and others upon laxatives or purgatives. Not a few combine several or many of them in inextricable confusion, or give together two diametrically opposed drugs, as, opium with oil, or aloes, in such proportions as to partly or wholly counteract each other.

Among the diseases grouped under the common head of colic, because not always distinguishable from each other, we must recognize for therapeutic reasons, numerous pathological conditions due to various causes among which are :

1. Dietetic colic:
   a Overfeeding colic. *b* Colic due to damaged or improperly prepared food. *c* Starvation colic.
2. Obstruction colic:
   a Impaction colic, including the impaction of dry, woody food in the large intestines of adults, the retained meconium or ingested straw or hay of young foals, and the gummy feces occasionally seen in horses at pasture on green grass. *b* Mechanical obstruction. (1) Volvulus. (2) Intussusception. (3) Herniæ. (4) Tumors.
3. Colic due to paralysis of the intestines.
4. Colic due to the interruption of the gastro-intestinal blood supply. *a* Thrombosis. *b* Embolism.
5. Reflex nervous colic due to exposure, fatigue and other causes—spasmodic colic.

6. Colic due to external mechanical pressure, or to abnormal position of the body.
7. Worm colic.
8. Colic due to foreign bodies in the intestinal canal. *a* Calculi. *b* Sand or dirt.

The application of rational therapeutics to this group of pathological conditions renders it necessary that our first law shall be to rigidly avoid the use of any medical agency which would tend to aggravate any pathological condition present, whether recognizable or not; or to pursue, as far as possible, an expectant line of treatment.

In the colic of overfeeding, with its history we have no cause to suspect any obstruction, but have to deal with an overloaded gastro-intestinal canal, the contents being moist, soft, and tending to rapid decomposition with the formation of large quantities of gases, with the consequent dangers of gastro-intestinal ruptures, suffocation, intestinal paralysis, gaseous poisoning, and other untoward results.

The chief and most urgent element of danger is the gaseous accumulations, from which relief should be given as promptly as practicable for many reasons:

1st. To avoid rupture of the stomach, intestines or diaphragm. 2d. To prevent suffocation. 3d. To prevent toxic effects from the absorption of gases. 4th. To permit normal peristalsis and avoid gastro-intestinal paralysis. 5th. To relieve pain. 6th. To prevent intestinal displacement.

The use of the trocar for relieving gaseous distention is so prompt, efficacious and safe, that no apology is necessary for mentioning this method almost alone. In order to fully accomplish all the purposes indicated above, the use of the trocar is demanded as early as any appreciable degree of tympany is present, and its repetition as often as like conditions return.

The gaseous accumulations are generally most pronounced in the large colon, and cæcum, and we usually aim to enter these with the trocar. The point usually selected for the operation is the highest part of the right flank, in which position, if the animal be standing, the gas is most free from admixture with food and consequently flows most freely through

the canula. If the patient is lying down the intestines are quite probably displaced somewhat, but most likely the most distended intestine occupies the highest point of the abdominal cavity, whether that be the middle or lower region of the flank, right or left side.

There has been an endless variety of trocars invented, the simplest being distinctly the best. The caliber of the trocar usually kept for sale is too great, being one-eighth inch in diameter or more, while three thirty-seconds of an inch is ample and adds to safety by decreasing the area of the wound about one-half. This reduction in size necessitates the use of the best of steel, well tempered so it will not bend. The point of the trocar should be far more tapering, the sharp part being two to three times as long as in those generally offered, and delicately sharpened so that its use occasions an incised and not a punctured wound. The canula should fit the trocar closely and perfectly, leaving no space between them, and the end of the canula should be well rounded and smooth so that no foreign matter can be lodged between the end of it and the trocar and carried into the tissues, or the peritoneum or intestine caught and pushed along before the canula. The trocar should be fastened immovably in the handle. Reversible trocars cannot be kept in order, their points always being dulled by contact with the handle when reversed.

If the instrument is to be carried in the pocket it should be supplied with an appropriate case. A very serious defect in the construction of most reversible instruments is the making of the trocar too short for the canula, so that when used the set-screw fails to hold it in place, allowing it to push back into the handle so far that the point is partly hidden within the canula, allowing the end of the latter to tear and abrade the tissues, marring or wholly preventing a successful operation. The minimum net length of canula should be six inches and even this will be found short for very fat, heavy draft horses. If too short the gut slips off the end very readily either from peristaltic movement or collapse of the engaged portion. Besides, it may be necessary to pass through one intestine and enter another part. Before using,

the trocar should be carefully sterilized, and, when practicable, that part to be selected for the operation should also be cleansed, although this is not generally so important, for if the trocar be properly made, as described, it cannot well drag foreign matter far into the tissues. The incision of the skin at the point of operation by means of a lancet, is unsurgical, producing a larger and more open wound than that caused by the trocar through which infection may the more readily occur. The skin serves as an important bulwark against septic infection and should be left as nearly intact as practicable, which is best done by using the small trocar with its sharp, well tapered point, which cuts like a lancet and leaves when withdrawn a wound almost undiscoverable. The trocar should be held loosely in one hand, and perpendicular to the abdominal walls, and its insertion accomplished by a quick stroke with the palm of the other hand, driving it to its desired depth at a single blow. The trocar is then withdrawn and the canula is retained in position with the hand, being careful to prevent its dislodgment from the intestine by peristaltic action. After the gas has escaped, the trocar should be reinserted into the canula so that on withdrawal the intestinal walls catch and wipe off any ingesta which might otherwise adhere to the mouth of the canula, and drop into the peritoneal cavity or lodge in the abdominal walls. More abscesses and septic inflammations are probably due to drawing septic material from the intestine and depositing it in the tissues, than are caused by the introduction of septic material from without. Should the escape of gas be unsatisfactory the depth of introduction may be varied by placing the trocar within the canula and pressing it forward or drawing it outward. Frequently it is found that a small amount of gas escapes from the intestine just punctured when it collapses, and the pressure of the other portions of the intestine is such that the portion encountered does not refill. In such a case the collapsed part of the bowel is to be passed through and the distended portion entered. If success is wanting on the right side there should be no hesitation in trying the left. Fatal sequelæ from the use of the trocar have been recorded,

but I have not observed them. In one case I produced peritonitis of a severe type, owing to too short a canula, from which the intestine repeatedly slipped and probably caused the lodgment of intestinal contents in the peritoneal cavity. In another case a very serious abscess took place in the abdominal walls, finally rupturing in the inguinal region. In this case the instrument was used in the dark, and the horse was thickly smeared with wet manure at the point of operation, the case being one of unusual urgency. Several times small abscesses have followed the use of the trocar, but they were insignificant and did not interfere with the daily work of the patient.

It has been suggested that when the stomach is the seat of considerable gaseous distension, as evinced by attempts at vomition and eructations of gas, it should be attempted to introduce the trocar into it, and it has been claimed that this operation has been successfully performed by the use of an extra long trocar, introduced at the usual point for entering the colon or cæcum, the practicability of the operation being explained upon the theory that when distended with gas the stomach turns on its longer axis and floats upwards.

But in autopsies which I have conducted after rupture of the stomach, that organ was found in its normal position and the position of its former contents in the peritoneal cavity indicated clearly that the relation of the stomach had been constant. It is rare, however, that the stomach requires direct relief from gaseous distension, as the gases are most frequently formed in the intestines and pass forward into the stomach, or being formed in the stomach pass readily backward through the intestine until the colon is reached.

The stomach does not rupture because the gas within it is under greater pressure than in any other parts of the alimentary canal, but because of the much greater surface upon which the gaseous pressure is exerted at the same rate per unit of surface. If the colon be relieved by the use of the trocar, the stomach is immediately relieved also in nearly all cases. At least I have not observed rupture of this organ in any case where the colon was kept free from gaseous accumu-

lations. Should emptying of the colon fail to relieve the gastric distension, the stomach tube may be found useful.

When the tympany has been relieved by the aid of the trocar the chief element of urgency has been overcome, and the pain and discomfort of the animal has been markedly alleviated, so the attendant has time to proceed deliberately and carefully. The patient should be made as comfortable as possible, a good, deep bed of straw provided, upon which, if it will lie down, it should be allowed to rest quietly. If very restless and not exhausted, slow walking sometimes allays the uneasiness and tends to hasten the evacuation of the bowels. The patient should be prevented from throwing itself violently on the ground. Hot fomentations, poultices, brisk rubbing, or the application of stimulating liniments to the abdominal walls may be of value. If the pain present demands it, the remedies to be administered should be so selected that while alleviating the pain they should not interfere with the normal secretion or peristaltic motion of the alimentary canal and that they should, as far as possible, check further decomposition of food and the consequent gaseous accumulations. Opium and morphine are both clearly contraindicated, as they serve to constipate and paralyze the bowels and augment the gaseous distension.

Turpentine, camphor, etc., relieve the pain fairly well, but are too prone to irritate. Carminatives, such as ginger, anise, peppermint, etc., exert a wholesome influence by stimulating the normal action of the bowels, especially when combined with alcohol or its derivatives, such as nitrous ether, these latter possessing in addition to their anti-spasmodic properties a distinctly antiferment action. Chloral hydrate claims here a very important place, being markedly antiseptic, yet anodyne in a high degree. Chloral has the disadvantage that after a full dose, especially in solution, it is dangerous to follow soon after with a drench, as the chloral so benumbs and anæsthetizes the throat and larnyx that thereafter swallowing is imperfect and the medicine drops into the larnyx and passes into the lungs, producing foreign-body pneumonia, more frequently, in my observation, acute lung apoplexy ending fatally

in one to a few hours. Some writers, among them Finlay Dun, state that chloral may be safely administered hypodermically, but some three exceedingly unfortunate attempts to use the drug in this way, in which extensive gangrene of the subcutaneous connective tissues ensued in each case, disabling the patient for several weeks, I became convinced that the drug was not usable in this manner. Again I have tried administering the drug in the dry form, wrapped in paper, but the paper may break in the mouth or fauces and cause painful excoriations, or may lodge in the œsophagus and cause inflammation of that organ, producing symptoms of choking. In one case I was called fifty miles in consultation, in a supposed case of choking, to find on my arrival that the œsophagus had been burned by the lodgment of a chloral pill. It is, therefore, best to give chloral in small, soft, tenacious pills, which will not readily break, cannot lodge in the œsophagus, and once in the stomach will quickly melt away.

An important question confronting the veterinarian is the action to be taken regarding the presence in the intestinal canal of the superabundance of food.

Generally purgatives are resorted to as the rational treatment indicated. But a careful study of the conditions presented and observation with the various methods of treatment demonstrate this to be erroneous.

The ordinary purgatives act too slowly in the horse so that ere purgation ensues the crisis has been safely passed, and if let alone the bowels will move gently, or undergo slight diarrhœa.

In these cases of over-feeding, with flatulence, the bowels have been distended, more or less paralyzed and usually irritated or inflamed. A full dose of aloes under these conditions means that it cannot act until the colic ceases, or rather until the time when naturally the colic should cease, when in the weakened state of the bowels the colicky pains are renewed by the drastic action of the aloes, and when the bowels finally respond, they do so violently, not infrequently ending in the death of the animal, quite commonly delaying the return of the horse to his accustomed duties for several days.

In other cases aloes remains in the system for a long time causing great depression, and in some cases fatal aloe poisoning, without showing any tendency to purgation. The bland oils, while doing little, if any, good in these cases, do comparatively little harm, but the already overloaded stomach can certainly profit but little by their introduction.

I have noted, also, that when oil has been given, and yet remains in the stomach, that in case of pills wrapped in paper entering it the wrappers become oiled and the pill is not dissolved for several hours.

In this way I have seen chloral pills repeated several times without effect until finally the oil has been absorbed and then the combined effects of several large doses of chloral were manifested all at once.

Other purgatives such as glauber salts, tartar emetic and calomel have been commended and are probably safer than aloes or oil, although their value may well be doubted.

More recently, pilocarpine and eserine have come into prominence as remedial agents in this affection and like most new remedies, have been much abused and have then tended to relapse into disuse.

If eserine has a place in veterinary medicine it is certainly in this disease. The food is generally soft, and needs only prompt peristaltic action to cause its expulsion from the alimentary canal, and this eserine can furnish. Friedberger and Frohner fear that in the over filled condition of the stomach and bowels the severe muscular contractions are likely to produce rupture. This would doubtless be true in case of mechanical obstruction, such as volvulus; of inflamation with consequent paralysis of a section of intestine; of impaction with hard dry food, or in the presence of great accumulations of gas. The mechanical obstructions we rarely suspect in cases where a clear history of overfeeding exists, the impaction with hard dry feces, rarely, if ever, occurs in these cases, the inflamation and paralysis of sections of the bowel usually takes place only after several hours duration of the disease, while the gaseous distension is subject to our control by surgical means. We therefore see no

direct danger in the use of eserine in the earlier stages of this affection, if the gaseous distension be first relieved by the use of the trocar. I think it better to give small, repeated doses of one-half to one grain rather than one large dose. More recently still our attention has been called by Prof. Dieckerhoff to the use of barium chloride as a purgative for the horse, and much is claimed for its promptness, efficacy and safety, although its advantage over eserine except in cost is not very clear. It must be constantly borne in mind that purgatives are unnecessary in this affection, and that unless their use be very judicious they do more harm than good. I long since abandoned almost wholly the use of purgatives in colic from overfeeding and can say that my success has been far better than under the usual regime. With the abandonment of purgatives, opium and morphine have, as already implied, also been discarded. If morphine is used, purgatives may be necessary to overcome its effects, but they are not essential in combatting the disease. I would then say if purgatives are to be given, use them only in the very early stages, in absence of great gaseous distension, and select preferably eserine. If purgatives have not been used, we frequently find after the crisis of the disease has passed, or even during the early stages, a more or less severe diarrhœa, which must not be checked but merely watched and controlled. Demulcent gruels, stimulants and carminatives will almost always suffice, and if the feces are very fetid, salol should be added.

In colic due to the ingestion of musty or otherwise unhealthy food, leading to its early decomposition within the alimentary canal, we generally find a degree of tympany which necessitates early and repeated use of the trocar; our efforts should next be directed towards staying the putrefaction of the intestinal contents, by the administration of antiseptics, antiferments, diffusible stimulants and carminatives. Salol, and possibly naphthaline, should prove highly useful during the disease and convalescence.

Opium is clearly contraindicated, as it serves only to stop the peristaltic action of the bowels and the secretion of

digestive fluids, thus encouraging the decomposition of the food which constitutes the essential factor in the disease. Hepatic stimulants, by increasing a flow of bile, stimulate healthy peristalsis and render the intestinal contents aseptic.

In the latter stages, frequently early in the disease, there is a marked tendency to diarrhœa which should be combated by demulcent gruels, carminatives and diffusible stimulants. In colic due to a prolonged deprivation of food we frequently find coincident fatigue. Opium and morphine are rarely, if ever, indicated, but rather carminatives and diffusible stimulants, such as aromatic spirits of ammonia, ginger, alcohol and nitrous either, in the form of a drench in large volumes of warm water or gruel.

The patient should be kept as quiet and comfortable as possible. Heat applied to the abdomen by means of hot wet blankets may afford much relief. Purgatives are clearly inadmissible.

In the colic of impaction in adult horses due to the ingestion of food composed too largely of woody fibre, we are confronted with conditions requiring much time and not infrequently great tact to remove. There is plenty of time so we need not hasten. Purgatives are almost universally prescribed, but the very drastic members of the class are clearly contraindicated, such as croton oil, gamboge, eserine and pilocarpine, but we must rely rather upon those cathartics which will slowly and gently soften down and render pultaceous the accumulated dry mass, when little, if any, stimulation to the peristaltic action will accomplish its expulsion. The impaction generally occurs too far forward to render enemata of avail. Aloes serves the purpose fairly well, but large and repeated doses of the bland oils do better, and better still, perhaps, one moderate dose of aloes combined with oil, the latter to be repeated frequently. The formation of gases rarely occurs. The pain is seldom severe and calls for remedial treatment but rarely.

When relief from pain becomes necessary, aconite, belladonna or cannabis indica should be used, or, if used with great caution, morphine may be employed in doses of one-third to

one-half grain subcutaneously, as in these doses it is not constipating.

In newly born foals we frequently meet with obstinate colic, the result of retained meconium, or a little later, owing to the ingestion of hay or straw. In these cases while large doses of bland oil may naturally aid, enemata of warm water or oil constitute the most reliable remedial measures. By fitting the nozzle of a bulb syringe into an ordinary gum horse catheter, the latter can be slowly and carefully introduced up into the obstructed bowel, the water or oil being all the time slowly introduced. In this way the catheter becomes insinuated between the fæcal mass and intestinal walls, following the flexures of the intestine the full length of the catheter, and permits the fluids to mingle with and soften down the hard mass so that it readily passes away.

Repeated enemas for several days or even a week may at times be necessary, the foal in the meantime being muzzled if needed to prevent further ingestion of indigestible matters. In these the colic is rarely so acute as to warrant anodyne remedies. In that form of colic due to obstruction of the rectum of young animals at pasture by a gummaceous fæces, the cause of which we do not understand, the inversion of the rectum generally attracts more attention than the accompanying colic. It is to be remedied by the manual removal of the gummy fæces, aided by enemas of warm water, and its recurrence prevented by a change in diet.

The colic of intestinal paralysis is closely allied to that of impaction in many cases, but calls for a rather more delicate judgment in its treatment.

When the paralysis is due to a want of general tone in the animal, the result, most frequently, of inactivity and high feeding, we generally need only to wait, which is frequently about the most difficult of all courses to pursue, especially if the owner be present. Purgatives must necessarily increase the danger of the disease. Oleaginous laxatives and demulcents, by softening the intestinal contents, tend to relieve the malady. The pain is rarely extreme, and should, when necessary, be controlled by such remedies as will not interfere with

normal intestinal functions. Small, laxative doses of morphine frequently act nicely, relieving the pain and tending to overcome the disease. In one of my cases of a heavy draft mare in high condition and idle, one-half grain doses of morphia repeated two or three times daily controlled the colic perfectly, and on the sixth day without other medication the bowels moved normally and recovery was complete without purgation, while purgation would probably have led to superpurgation with unfavorable results. In fact, my observations of the use of morphine in intestinal paralysis, suggest strongly its use in severe impaction.

The treatment of volvulus and intussusception, owing to the difficulty of exact diagnosis, must be unsatisfactory. In the present state of our knowledge it should be practicable, where positive diagnosis is possible, to give relief surgically. In cases where they are suspected and surgical correction not undertaken, only palliative means are to be attempted, such as the relief of pain, prevention of gaseous distension and abstention from purgatives.

There is much variation in views as to the causation of these displacements, some ascribing them to the irregular muscular contractions of colics, others to the contractions induced by purgatives and others, in cases of volvulus, to the rolling of the animal during the agony of colic. The important point to consider in our present theme is the possibility of producing or preventing them during our care of a colic patient. Volvulus is largely attributed by writers to violent rolling, but, strangely enough, apparently occurs most frequently, according to statistics furnished by these writers, where the rolling is prevented as far as practicable, so that others, notably, Friedberger and Frohner, in whose opinion I concur, think this has been brought into too great prominence. In fact rolling is quite as likely, I think more likely, to correct such displacements than to cause them.

In a practice of sixteen years, without recorded numbers, but perhaps light in colics, in which I have habitually made post-mortem examinations when practicable, I have found but one case of volvulus, that involving the entire cæco-colic

mass, in which case from the history and symptoms the displacement must have occurred prior to the symptons of colic, and the rolling certainly had nothing to do with it. Of intussusception I have observed three cases, one in an adult affecting the small intestine, the history unknown, probably antedating the colic, and not due to purgatives; the other two were ileo-cæcal in young foals, cases which I have already recorded, due to thrombo-embolic colic, the result of the presence of strongylus armatus in the mesenteric arteries. Friedberger and Frohner allude to this as a common cause of intussusception. From all the evidence at hand it seems improbable that intussusception is caused by rolling, nor can we believe by regular contractions due to purgatives. It seems probable that it is due to irregular intestinal contractions such as exist to a degree in colic, more perhaps in colic interfered with by injudicious doses of morphine, combined with purgatives.

I believe it quite rational to assume that such irregular contractions would ensue when colic is interfered with by conflicting treatment, by giving two remedies, like opium and aloes, the one in paralyzing doses, the other in doses to excite peristalsis. This precaution, with as nearly perfect freedom of the patient as possible and care to prevent gaseous accumulations, we believe will do all that is possible to avoid the dangers from these accidents.

In hernia and pressure from tumors we must rely upon surgical interference, but these operations may be made easier, safer, and in cases only possible by the previous use of narcotics or anæsthetics.

In colics due to thrombi or emboli we have an obstruction to the blood supply which must be relieved by the establish ment of sufficient collateral circulation before recovery can take place, so our treatment is purely expectant and the result must depend upon the success or failure of the required collateral circulation before fatal lesions have occured in the affected parts. We must rely upon those remedies which relieve the pain, without interfering markedly with peristalsis, although in most cases it may be safely diminished for a

time. Morphine in small or medium doses is indicated unless tympany is present, in which case it should give way to cannabis indica, or to chloral, alcohol and ether, the gaseous accumulations being studiously relieved by the use of the trocar. Purgatives are clearly inadmissible.

In spasmodic colic, while carminatives, stimulants, sedatives and other classes of remedies relieve in many cases, morphine certainly comes most rationally into use as the chief remedial agent, and it may be pushed to a very considerable degree. It should be constantly borne in mind, however, that *morphine is not soporific in solipeds, but, on the other hand, in large doses is uniformly and dangerously excitant*, as has been pointed out by Guinard (Jour. de Med. Vet et de Zootechnie, July, 1893), so that it must be used cautiously and not pushed beyond the degree needed for the alleviation of pain. No remedy is so misused and its actions so misunderstood by veternarians as is opium, and its chief alkaloid, morphine. We are generally taught that it is soporific and depressant in the horse. So when the veterinarian makes too great haste to relieve pain by its use the horse becomes excited, nostrils dilated, eyes staring, tail elevated and the patient becomes uncontrollable, the victim of opium poisoning, while the improperly taught veterinarian tries to overcome this excitation by larger doses, adding more and more to the difficulty, finally ending in fatal opium poisoning, and the veterinarian is left wondering why his morphine would not quiet the patient. Not long since I read the communication of a layman of how the veterinarian of his locality habitually lost all colic cases because morphine failed to quiet them, but instead they were more restless and moved faster as more of the drug was given, while other horses treated by novices with sage tea or peppermint recovered, and drew therefrom the conclusion that, so far as colic is concerned, veterinary science is a conspicuous failure, and there was much logic in his conclusion.

I recently saw a horse very much excited by one grain of morphine given to relieve pain after castration, and to relieve this excitement two more were given which rendered the

patient utterly uncontrollable and dangerous to approach, and it was only with the greatest difficulty that chloroform was administered and a check placed upon a very serious looking case of opium poisoning.

So while we commend morphine in spasmodic colic we caution judgment. Owing to the generally empty condition of the digestive canal, purgatives are uncalled for, and, as already stated, should on no account be given if opium has been employed to relieve the pain.

Cannabis indica is preferred to morphine by many in these cases, and it certainly presents some points of superiority.

Hot fomentations and stimulating applications to the abdomen are probably of more service in these than in other colics.

Colic due to external mechanical pressure, such as being accidentally or intentionally cast in a cramped attitude, calls for little remark as to treatment beyond the very obvious suggestion to place the animal in a comfortable position. The fact that colics do arise from casting should suggest care in our methods to avoid cramping the limbs and body as far as possible, especially for operations of long duration. We should be careful, too, that colic patients do not have their malady aggravated by being left cast in an uncomfortable position, and also we should bear in mind that probably a not insignificant number of colics are due primarily to ill fitting, uncomfortable harness and improper hitching, by which the body is thrown in a strained position for a long period. In cases where colic may be traced to the presence of parasites in the digestive canal we generally find coincident debility, thus suggesting stimulants, carminatives and bitter tonics, combined with vermifuges, which latter should be followed by an aperient, preferably of oil, while in some cases, where the patient's strength will permit, a brisk purgative may be substituted with advantage.

The presence of calculi in the digestive canal are rarely diagnosed during life. They are then to be treated, if not by surgical interference, by oleaginous aperients and, if available, by warm enemata, in order to soften the fæcal matter and re-

lax the intestine in which the calculus is imprisoned. Drastic purgatives should not be employed as a rule, as their violent action may result disastrously, but if to be used at all, it should be done early, before the affected parts become paralyzed and inflamed.

Colic due to the ingestion of sand should be treated with a view to gently expelling the sand and allaying irritation of the bowels by means of moderate quantities of bland oil and demulcent gruels.

In general, we would say, in all forms of colic see first that no remedy administered can in any probable manner exert an unfavorable influence upon any pathological condition present. We should always avoid, until we have clear evidence of their necessity, purgatives and agents which induce intestinal paralysis, and in all events avoid, if the action of either is desired, the combination of the two. It should be constantly remembered that purgatives are rarely directly necessary or advisable, but commonly necessitated, or supposed to be, by the improper use of opium, a drug which annually kills ten horses with abdominal diseases for each one it saves.

ADDRESS

TO THE ASSOCIATION OF VETERINARY FACULTIES OF NORTH AMERICA.

By Prof. J. H. Wattles, V.S., Kansas City Veterinary College.

Mr. President and Gentlemen:

While the subject of this address is ostensibly that of the results that have been obtained by prescribed entrance examinations, and as the subject is to-day largely prospective as far as my individual experience goes, my fellow members will pardon me if some digression is made, and some of the results considered that may be obtained by having positive and fixed lines for entrance examinations to be conducted upon, as well as some of the conditions that exist, and evils that might result, were each school allowed to act as its own censor in the matter of matriculation and graduation.

With the organization of the several faculties of the veterinary medical colleges of the country in the Association of Veterinary Faculties of North America, the fraternity and public had every reason to believe that a new era had dawned upon our chosen profession, and that while the pathway might not be strewn with roses, that the way was clear for our kindred professions to see that we were capable of maintaining that rank.

With solely fraternal and educational objects in view, the association of faculties was formally organized in Philadelphia, last September, and to those who had the pleasure of attending that meeting, will always remain a remembrance of the kindly spirit in which all of the deliberations were maintained. Without acrimony or intemperate language, and with a full and generous consideration of the many different conditions and surroundings of the several schools, the constitution of the association was adopted, and I earnestly believe with liberal ideas on the subject of advanced education, we meet again to-day.

There is no reasonable doubt existing in the mind of any impartial and disinterested person of the necessity of a higher standard of educational requirement in the matriculation examinations of our respective students, and we can all see very plainly, that it is only a matter of a very short time when every college that will be recognized as coming up to the standard will have adopted a minimum grade for the admission of students. With these points so clearly in view, and with the upward and onward tendency of the leaders in our profession, and with positive knowledge that different States are formulating laws regarding veterinary practice, it seems to me to be a rational conclusion that the proper thing for us to do is to act in the matter at once and not wait until compelled to act, and for all the colleges of this continent to unite with this association in endeavoring to create a certain standard in the admission of students, in their advancement in their respective studies, the length of time they shall be required to attend, and their final graduation.

By having positive rules laid down as to the admission of

students, every one will be perfectly satisfied that the gentlemen who graduate are capable, educated men. We will then be assured that men are not allowed to graduate simply because they have been in empirical practice for a time, or because they are druggists, or because they hold some classical degree, or a diploma from some normal school; on the contrary, we will know that they are men that have been educated for the veterinary profession, in veterinary colleges, and are capable of practicing in that profession.

It is important to us all that the moral character and business principles of men about to enter our profession be inquired into before they are allowed to matriculate. My belief is that every applicant should be required to fill out a printed blank, agreeing to comply with all of the rules of the college he wishes to enter, and also agreeing to comply with the code of ethics of the State in which he may enter practice. This surely would be no hardship for any honorable man, and we do not desire any other in the profession. It is surely a very embarrassing thing for us to come in contact in our practice with men that are graduates of recognized colleges, and to affiliate with them because of some underhand business methods, or because they are drunkards or gamblers, and it seems to me that close scrutiny should be made of intended students before admitting them.

One very important matter that needs the close attention of this association, is that of the actual time of attendance of students. It seems to me to be a ridiculous proposition, to say in an announcement that we require attendance on a certain number of courses of six months each, and then to allow men to attend only a fraction of the time. To illustrate this phase of the subject: Suppose a student enters in November, 1893, and he is allowed to come up for final examination the following spring and is passed, the student's name appearing in the list of gradutes in the catalogue, issued in 1894. Could he have attended more than four and a half months actual time?

Suppose the fact to exist that schools were in the habit of allowing men to enter the school and appear for final exam-

inations at the end of one school year, and even the year shortened by the late appearance of the student. Could a student acquire sufficient knowledge in so limited a time to become proficient in our science? The class of men usually applying for time allowance is some man that has been in practice in some small town where there has been no qualified practitioner until the appearance of one that has recently graduated from some college, enters the neighborhood, and forces the older man to protect himself by gaining a diploma, or else they are forced into college by the action of State laws. My experience with this class of men, as students, is that they grasp ideas slowly, and make the poorest practitioners when out.

The requirements of the college that I have the honor to represent, during the first two years of its existence were the same as in other two-year colleges, and I can look back over our brief period of existence, and see nothing to regret, except the fact that we admitted during our first two years, men who had been in practice for some time, and allowed them to appear for final examination at the end of the first year, happily for us, we were soon satisfied with the experiment, and the practice was discontinued. We during the same period allowed licentiates and graduates in pharmacy to enter the senior class, but we soon discovered that the time was too limited for them to acquire sufficient knowledge, and this practice was also abolished.

For the past two years our matriculation examination has been up to the standard required by this association, consequently we were in no manner disturbed by adopting the rules of this body, and unless my judgment is very much at fault, there is not a college in America that would not be benefited by adopting the same rules, and maintaining a rigid adherence to them.

All applicants for matriculation in this college are now required to fill out the printed application furnished by the school, in which they agree to conform to the established rules. All applications for admission are acted upon at a regular meeting of the faculty, and the application must be ap-

proved by three-fourths of the number present at such meeting. This takes the responsibility out of the hands of one man, and places it where it justly belongs, in the hands of the entire faculty. We require an actual attendance of upon eighty per cent. of all lectures, and no student is allowed to come up for examination that has not attended the required percentage. This does away with the practice of students entering or leaving school at will, or non-attendance upon lectures or other forms of instruction.

Every inducement is held out to our students to take the three years' course, with the result that fifty per cent. of those who entered last year have accepted, and fully as large a percentage will begin the three years' course this session. As we have not felt strong enough as yet to put on a three years' compulsory course, we have met the condition as far as we possibly could by making an optional course of three years, from which it is but a short step to the regular course prescribed by the representative body of our profession, and now adopted by the leading colleges of America.

With the firm conviction that in union there is strength, and with every desire to advance the interests of our profession; with the belief that only by union in action, kindness in our discussion, charity to all, that we can reach the goal of our ambition in our life work, I thank you for the honor you have conferred upon me by giving me your attention.

P. S.—Since preparing this address for this association, the Kansas City Veterinary College has decided upon a three year compulsory course, beginning January 1st, 1896. This present session will be the last that students will be admitted for a two year course.

REPORT OF THE COMMITTEE ON DISEASE.

By M. R. Trumbower, Chairman.

Read before the United States Veterinary Medical Association.

Gentlemen:—In making this report, I have, possibly, made an innovation in comparison with the former reports of similar committees, inasmuch as that it may be regarded as a

medley. I have sent out 200 circular letters, requesting information regarding contagious and infectious diseases, improved methods of treatment, etc.

My colleagues, Drs. Reynolds, Harger, Faust and Dinwiddie, will each contribute special reports on specific diseases. I have endeavored to obtain reports in a general way of the prevalence of disease, etc., throughout the United States, and will give the interesting sections selected from the numerous replies received. Some of the reports and opinions offered may be conflicting in their tenor, but I believe that in drawing the attention to these conflicting opinions, we may open up a field for thought and criticism, and thereby gain more than we would by taking the old cut-and-dried method of generalizing too much.

I do not know of any new discoveries that have been made in pathology during the past year; and many of the older theories in regard to specific diseases are still held in abeyance; therefore, I shall not attempt to repeat what has already been stated in former reports.

Evidently, it appears that no extensive outbreak of any one disease has been observed during the past year, although in some States the reports of the present year would indicate this; but we must remember that a certain class of diseases are now reported by veterinarians, or are being discovered by State Sanitary Boards, that have had very little attention given to them heretofore.

If it were not for making this paper too long, I should like to go somewhat into the detail of the history of preventive inoculation, and especially that of the anti-toxine fad.

The theory upon which this new theory is based is an outrage upon all known physiological and anatomical knowledge, and the veterinarians who associate themselves with the advocates of this extraordinary hallucination will surely regret the support given to it by them within the next ten years.

Trusting that many of these subjects may be brought up during this session, as I know they will, by gentlemen who have papers prepared on anti-toxine cultivations, I shall now

proceed to make reports from the various States as I have received them. I regret to state that I was disappointed in obtaining reports, from Pennsylvania and New York especially, in answer to a number of circular letters I sent to these States. I should have had more reports than I obtained. I may have been unfortunate in selecting the veterinarians to whom I addressed my letters, nevertheless, I have an impression that some of those to whom I addressed a circular letter might have given me something that would be of interest to the profession.

ALABAMA.—Dr. C. A. Carey, of Auburn, writes as follows:

"I wish to say to you that a number of veterinarians and others have written reports upon Bursattee, the India disease, as occurring extensively in the South. I do not believe there is any such disease in the United States, and call upon its discoverers to prove its existence in the United States."

I take pleasure in joining Dr. Carey in the request.

CALIFORNIA.—Dr. R. A. Archibald, of Sacramento, furnishes us with the following brief report:

"Anthrax, tuberculosis, and glanders, are very prevalent in this State, more especially anthrax, which exists in the form of splenic apoplexy. The last named disease destroys an enormous amount of live stock yearly in the central and southern portions of the State. It has one peculiarity, inasmuch as it appears in a more benign form than it has done in the Eastern States. One or two veterinarians have commenced vaccination for its prevention, but at this time I am unable to say with what success."

COLORADO.—Dr. Chas. Gresswell, of Denver, reports as follows:

"With respect to the prevalence of tuberculosis among the dairy and breeding herds, I have to state that only one case has been reported and proven, by the tuberculin test, to be this disease during the year. It is quite true that we have not, as yet, thoroughly examined all the dairy herds of the State, but those around Denver and a few of our principal cities are now under the inspection of the officers of the local health boards. I think I shall be safe in saying that the dis-

ease is absolutely non-existent among our range herds, and also among our breeding herds. There may be a few cases among the dairies which have not come to our knowledge, but, if so, we have no doubt that they must be imported stock. My experience of seven years in this climate leads me to say that judicious outcrossing of families hereditarily predisposed, and the peculiar advantages of this climate, without overcrowding or exposure to other unsanitary conditions, cause animals to become, to a very large extent, proof against contracting this disease.

Glanders, as you will see from the enclosed report, has existed in the State during '93 and '94; twelve in '93, and seven in '94, but all the cases resulted from an importation from St. Louis some few years ago. Very many cases of catarrh, simple and malignant, assume a chronic form in this altitude, which has many of the characteristics of glanders, and we believe in the past a great many of such cases have been wrongly condemned for glanders; at the present time I do not know of the existence of this disease in the State. The people here are thoroughly alive to the danger of glanders, and quickly report any suspected cases. I do not hold the view that glanders can be so differentiated by the climate of the Rocky Mountain regions that it can assume the extraordinary mild form described by some observers, nor that any such form could exist to any large extent, because the great changes of temperature, always existing here, would be sure to cause a malignancy at times which could not be mistaken, and which would distribute the disease to a far greater extent than it is now met with. Such cases as have been reported as a mild and latent form of glanders, we believe to be nothing more than the chronic, malignant form of catarrh above noted. This opinion has been verified in Colorado by many post-mortem examinations, and by the mallein test.

"Except among the garbage-fed hogs near our large cities, until last year we have had very little cholera, but last year, owing to the drought in Kansas and Nebraska, a great many store hogs were brought from these States into Colorado, and brought with them the disease to a large extent, and I am

afraid we have now several localities more or less permanently affected.

"During the last three years we have inspected over 650,000 Southern cattle which have passed into or through this State, without the occurrence of a single outbreak of Texas fever. The quarantine against Southern cattle is vigorously carried out by special inspectors appointed by the Board.

"I think if our County Commissioners can be prevailed upon to see that the carcasses of all animals which have died from anthrax or anthracoid diseases are thoroughly disposed of, in order to prevent contamination of the soil from this disease, we shall be able to report in the future a death rate from such diseases of less than one-third of one per cent. We endorse Pasteur's system of preventive inoculation for anthrax and anthracoid diseases.

"Spasma glottidis is a disease peculiar to the Rocky Mountain regions, and is characterized by great difficulty of breathing on exertion. It finally causes total asphyxia and collapse of the animal if urged into a gallop. It is due to nervous contraction of the muscles of the larynx, dependent upon disease of branches of the pneumogastric nerve which gradually increases in severity, and causes death of the animal in from one to six months after an attack. It is confined almost exclusively to range horses, and to special localities. Six outbreaks have come to my knowledge in the State during the past two years, with a loss of about 250 head of horses.

"The loss from scab in sheep is serious, and demands vigorous and continuous handling for its complete eradication, and immunity from outside invasion should be guaranteed.

"Losses from poisonous weeds and grasses on the open range are unavoidable, and must be for the most part accepted as one of the penalties of the range business. Such poisons are not as a rule eaten by any animal unless the natural grasses are scarce, and at times in the year when such poison plants are ahead of other vegetation in growth, and are then more dangerous to the semi-domesticated animal, with the natural functions of food selections not so well developed. Closely allied to the poisonous grasses in their affects are var-

ious forms of saccharine plants in their early or stunted development. In one period of the growth of the sorghum plant, when conversion of the vegetable starch into sugar is taking place, the plant is poisonous. I investigated several deaths from this cause during this year, when the excessive drought and early frosts had stopped the growth of some fields of sorghum, which were not protected from the open range."

DELAWARE.—Dr. H. P. Eves, of Wilmington, writes as follows:

"You are well aware of the fact that our State of Delaware is extremely small compared with her sister States, but we are at present well represented with diseases. We have dreaded Southern, or Texas fever encroaching upon us, and within the last two or three years we were troubled with a slight outbreak. Glanders within the last year have caused more or less trouble in our city and some of the adjacent townships. I can report one death of the owner of one of the animals, who contracted the disease while treating his horse. At present I do not know of a case.

"Cerebro spinal meningitis (so-called) is prevalent throughout the State. I can safely state that hundreds of horses die yearly. We have been striving to discover the cause, taking all steps possible, but as yet we are at sea. We have outbreaks during every month of the year; hot, cold, dry, and wet seasons. During the last ten years, judging from personal observations, the loss caused by the above mentioned disease amounts to hundreds of thousands of dollars.

"Tetanus prevails, but the number of cases yearly have been greatly reduced, due to the advice given by veterinarians.

"Tuberculosis is alarmingly present in the northern part of the State, especially within twenty miles of Wilmington. A great many cows have been tested with tuberculin, and we have found in a few herds as high as 75 per cent. diseased.

"We have had several outbreaks of anthrax during the last four years, and at present the disease exists in the salt meadows bordering the Delaware Bay, about 25 or 30 miles

south of Wilmington. Some farms on which the disease exists have almost lost their entire herd.

"Vaccination within the last two years has been practiced with success. It being impossible to pasture cattle in some districts without taking this precaution. No deaths have been reported on infected pastures where the animals have been treated.

"A fresh outbreak of anthrax a few weeks ago on an upland meadow was reported. The history being that no such disease has been known on the farm within the present century. Through the pasture runs a stream carrying the refuse from a morocco factory. Animals kept dying as long as the pasture was used, but it has been abandoned. We have one pasture in the city where cattle have been dying for four consecutive years.

"Rabies has been causing a great amount of trouble among dogs, cattle, and human beings as well. At least fifteen or twenty persons have been sent to Pasteur Institute for treatment.

"The tuberculin and anthrax vaccine used is manufactured by the bacteriologist of our Experiment Station at Newark, Del. I can positively state that both products are effective in their actions. I have had a great deal of experience with the tuberculin, and find it equally as effective as the Koch product. We have been fortunate enough to hold post-mortems on cases condemned with but very few exceptions, and have found the disease in every case where a reaction followed the injection.

"The State work of Delaware is under supervision of the director of the Experiment Station."

NORTH DAKOTA.— Louis C. L'Moore, V.M.D., of Jamestown, contributes the following report:

"Glanders in horses is our chief and most destructive malady. It is quite prevalent, and while at times it seems to diminish, it will again break out with new vigor and become as prominent as ever.

"Tuberculosis in dairy herds does not exist at all to my knowledge. It has been said by some veterinarians that

tuberculosis existed in a herd of short-horned cattle, but investigation by tuberculin and post-mortem revealed the contrary.

"Black-leg exists this year on the bottom lands of the Missouri River to the extent of one per cent.

"In the year 1893, there were 103 head of horses destroyed for glanders. In 1894, 113 head. This year there will be an increase of at least ten per cent. over the previous two years. This disease will doubtless be as prevalent for years to come as it is now, or as long as the Government continues to buy horses of Tom, Dick, and Harry, on contract, to supply the Indian Reservation in the State."

I take pleasure in announcing that Dr. Hinebaugh, of Fargo, will present a report in person on the "Millet Disease"—a continuation of his essay at the Chicago meeting in 1893. He kindly contributes the following brief note to this Committee:

"I have been experimenting during the past two years with turpentine as a means of healing up deep sores and fistula of the withers and poll. During all my experiments I have not failed to cure a single case rapidly where the bones were free from disease. I clean the cavity with a diluted solution of carbolic acid, being careful to wash out all the pus and decayed tissues. I then cover the edge of the wound with tallow, lard, or linseed oil, and inject turpentine into the cavity until it is nearly full. Repeat this operation after about three days, and usually about three or four applications is sufficient to cure the most aggravated forms that I have come across where no diseased bone is present. Four applications is the most that I have ever made. I did not use the knife in those cases, and thus far it has proved an entire success, passing beyond my expectations."

W. F. Crewe, of Devil's Lake, contributes the following:

"I have acted as District Veterinarian for the past two years, my district comprising nine counties. During this time I have destroyed 63 head of horses for glanders; 38 the first year and the balance the second.

"I received two calls of reported anthrax, but found no

cases affected on inspection. The loss in the district from this being about 35 head during the two years."

SOUTH DAKOTA.—Report from Dr. G. W. Palmer, Lennox:

"The principal disease to contend with in this State is glanders, of which 102 cases in 1893, and 43 cases in 1894, came under my observation. My attention has been called to only one herd of bovines that were afflicted with tuberculosis. That was in a herd of high bred short-horned cattle. The disease came to this herd from Iowa, and is still confined to that herd. Our native cattle are free from disease except lumpy-jaw, and a few cases of black-leg in the spring and fall of the year."

IOWA.—In reply to a special request, Dr. G. A. Johnson, of Sioux City, writes concerning the "Corn-stalk Disease" and the so-called "Bottom Disease," the following:

"In reply to your favor of the 19th inst., will say in regard to corn-stalk diseases, that in the AM. VET. REVIEW, Vol. 14, page 697, there is an article on that subject which was presented by myself in the form of a paper before the I.S.V.M.A. In that article I presented my views at that time, which later investigation has only served to strengthen. In the article as published, in the second paragraph, fifth line, it should read, 'according to the old dry-murrain theory,' instead of 'the old dry-American.' I have since seen another outbreak similar to the history given by me in the discussion that followed the reading of my paper. Also one outbreak among steers that were in pens being fattened for market. They were being fed snapped or jerked corn, that is, ears with the husks on. Some three out of about twenty died. Those that died presented symptoms similar to those of other outbreaks. Not having held post-mortem examinations, I could not say what were the pathological lesions of these cases, further than that the owner stated that the contents of the omasum were fluid in each case, and that no other lesions were manifested which attracted his attention, except some congestion or engorgement of the lungs, but as he could not tell whether this was an ante or post-mortem change, it could not be of any weight.

"In regard to the so-called 'Bottom Disease,' will say that my personal experience is very limited, but I have made much inquiry relative to the disease, and from such a source I am lead to believe it to be a cirrhosis of the liver, closely resembling malarial cirrhosis in man. I am very positive, from what I have been able to learn about it, that there is no connection between the disease and the so-called 'Rattle-Weed' (crotalaria sagittallis), for both of the cases that I have had the fortune to see, received hay that was free from this weed, while on the other hand, I have seen horses eating hay where nearly one-half of the bulk was rattle-weed, and none of them developed any symptoms of Bottom Disease. This of itself would not signify much were it not corroborated by many who have had much experience with the disease. I will send you by to-day's mail a copy of the Iowa State Medical Reporter (Sept. 1884), that contains an article by Dr. D. S. Fairchild, which I consider to be the best article yet published on the pathology of this disease. It is evident from the history of the cases given by him that all the cases which he saw were what should be called acute cases, for many of the horses that die with this disease are affected with it for from four to six months. Another fact that should be taken into consideration is that the investigation was conducted principally to prove the crotalaria theory, and the experiments that are given in this article were conducted by some student and are wholly unreliable."

Dr. W. B. Niles, of Ames, writes:

"No disease has been unusually prevalent. Swine diseases have, however, occurred in this region earlier than is usually the case. I have studied an outbreak of swine disease which proved to be swine plague, in May and June. The Government remedy apparently did no good. The most serious disease in this State at present is tuberculosis. This is much more prevalent than has been heretofore supposed. The tuberculin test has revealed it in many herds that had been supposed free from it. Dairy herds are most involved, but many breeding herds are affected."

F. H. P. Edwards, of Sioux City, writes:

" Ectozoa and entozoa have been very plentiful in all domestic animals, especially in dogs and horses. Ascaris megalocephala and strongylus tetracantha being the most prevalent; the latter in horses, causing several deaths with the usual symptoms.

" Influenza is quite common in a mild form. Actinomycosis, tuberculosis, and hog cholera, have also come under my observation in the last year."

(*To be continued.*)

SERUM THERAPEUTICS.*

By S. J. J. Harger, V. M. D., Phila., Pa.

A Paper read before the Pennsylvania State Veterinary Medical Association at Cresson Springs, Pa., Sept. 8th, 1895.

The discovery of serum therapeutics, now applied in practice, has opened a new era in the treatment of disease. Although confined as yet to a limited number of diseases and not yet thoroughly tested, this method of treatment has opened a field of experimentation whose limits to-day we cannot define. A general resume of the subject may not be amiss before this meeting.

It is known that the vegetable alkaloids, abrine, ricine, etc., very poisonous to animals, can, when given in repeated and very small increasing doses, develop an immunity in these animals which are thus able to withstand a quantity of these substances rapidly fatal to those not previously treated. A product is formed in the system which becomes sufficiently abundant to neutralize the toxic action of these poisons. Likewise in morbid processes, the repeated introduction into the system of a microbe or its product called *toxin*, causes the formation in the economy of a substance called *anti-toxin*, which is capable of counteracting the pathogenic action of such microbes or their poisonous excretions. This, in a word, is the basis of the so called anti-toxin treatment. The anti-toxin

*The experimental information is drawn from "Annales de l'Institut Pasteur," Sept., 1894.

is thus reciprocally successful to combat microbes or their products, to which it owes at least indirectly its origin.

Serum therapeutics was first studied in a crude way in cow-pox septicæmia in the dog, but has only attracted special attention since Behring and Kitasato have demonstrated the properties of the blood-serum of animals immunized against tetanus and diphtheria. They recognized in the blood-serum of such animals both preventive and curative properties when injected either before or after the introduction of disease germs into the body.

Some anti-toxin blood serums have the power of counteracting the virus of other diseases. Thus, the serum of animals immunized against symptomatic anthrax is effective against the bacillus of acute septicæmia (Duntschman). The serum of a healthy man, and at times that of the horse, is immunizing against the intraperitoneal injections of cholera (Pfeiffer). The prophylactic action of blood serum is therefore not absolutely specific; it is possessed in some instances by normal serum.

Both the toxin and the anti-toxin are albuminous bodies, very similar in chemical properties but different in physiological action, and precipitates by alcohol, which permits of its preparation in a condensed form.

Preparation of the Toxin—The process of preparing the toxin varies with the variety of the specific microbe. Suffice is to say that the latter is grown upon a favorable medium, such as bouillon, gelatine, agar, etc., the mature culture (diphtheria) being passed through a Chamberland filter; the filtrate, a clear liquid containing the toxin, is preserved in well filled corked bottles. It gradually loses its activity.

Immunization of the Animal.—This may be accomplished by subcutaneous injections of small and repeated doses of pure or heated toxin; a better method, that of Roux and Villard, consists in mixing three parts of toxin with one of Gam's solution of iodine. The initial dose in the rabbit is one-half cc. (7 drops) repeated every three or four days for several weeks; the dose is then gradually increased, and finally the undiluted toxin is given. The horse is the animal usually selected to

furnish the anti-toxin serum of tetanus and diphtheria. He is not very sensitive to the diphtheritic virus, but the serum can be readily obtained in large quantities by bleeding from the jugular vein, and, besides, this serum has proved to have a strong anti-toxic power. Of course he must be free from any disease, and glanders must be eliminated by injections of mallein. For diphtheria, the cow, dog, sheep, goat and rabbit can also be used. The cow is very sensitive to the diphtheritic poison, even fatally so; the toxin is excreted with the milk.

Formation of the Anti-toxin.—The anti-toxin is a cellular secretion, but it is not determined which set of cells are active in this process. It is not a transformation in the body of the toxin injected. The anti-toxin diminishes with the cessation of the toxin injections. In one experiment, two rabbits were each injected with 103 cc. of tetanus toxin, the first in 33 daily doses, the second in 9 larger doses. The serum of the first neutralized 150 parts of tetanus toxin; that of the latter only 25 parts. The two serums were of unequal preventive power; the quantity of toxin injected was the same in both cases but the method of administration differed. By successive bleedings in the rabbit, a quantity of blood equivalent to the entire volume of the circulation can be removed and anti-toxic power of the blood is not sensibly lessened. The anti-toxin is secreted rapidly as it is drawn away without any new injections of toxin.

An important question is the manner of action of the anti-toxin after the introduction into the body. In diphtheria and tetanus it counteracts the effects of the toxin; in some diseases it is protective only against the microbe and such animals as remain as sensitive to the toxin as those which are not immunized.

A mixture of anti-toxin with an immunizing power of one billion, and tetanus toxin one one-thousandth cc. of which destroys a mouse, in proportion of 1 to 900 becomes harmless. One-half cc. (one eighteen one-hundredth cc. serum) injected into a guinea-pig does not produce tetanus. This result, however, is not always the same; a mixture innocuous to mice is fatal to guinea-pigs. In eight out of ten guinea-pigs one-half

cc. (one nine-hundredth) is inactive, while the remaining two develop tetanus; again one cc. (one five-hundredth) is harmless to guinea-pigs while three cc. cause tetanus.

These experiments show that it is not a question of neutralization or chemical union between the toxin and anti-toxin in the blood, but rather the stimulating action of the former upon the animal cells, enabling them to resist the action of the virus of the disease.

The existence of a previous disease or a previous injection of microbe products is not without effect. It weakens the animal tissues which respond less strongly to the stimulating action of the anti-toxin. Roux and Villard injected five guinea-pigs with one-half cc. of anti-toxin serum and toxin (one to 900) with a negative result. Five other guinea-pigs, which had some time before been immuned against the vibrion of Massaonah, developed tetanus, while the same treatment as the preceding five, one-third cc. only produced tetanus when the animal is subsequently injected with microbic product, coli bacilli, etc.

In eighty days, this horse, the details of immunization of which I will cite at the end of this paper, received over eight hundred cc. of toxin without any symptons other than a slight local œdema and an elevation of temperature of one degree.

The serum of a horse immunized in this manner had a preventive power of more than fifty thousand; that is, a guinea-pig inoculated with one fifty-thousandth of its own weight of the serum twelve hours before will resist the action of one-half cc. of a virulent culture of diphtheria bacillus. One-tenth cc. of this serum and one cc. of diphtheria toxin does not produce any œdema in the guinea-pig when injected under the skin.

The horse is kept in this condition of immunization by injections at intervals of fifteen to twenty days of diphtheritic toxin (about 200 to 250 cc.).

Roux and Martin immunized a horse with 40 cc. of the toxin heated to 65° C. given in eight doses at intervals of ten days; he was then injected with 1 cc. of pure toxin repeated at regular intervals. The virulent bacilli are also employed for this purpose.

The serum employed by Roux and Martin in children and guinea-pigs in doses of $\frac{1}{10}$ cc. killed the latter in forty-eight hours. Guinea-pigs injected with a quantity of serum equal to $\frac{1}{100000}$ part of their weight resisted a dose fatal to control animals in five days; $\frac{1}{50000}$ immunized them against a quantity fatal in 48 hours.

Infection having taken place, the quantity of serum necessary to preserve life must be in proportion to the time elapsed since the introduction of the poison into the system. Guinea-pigs receiving a dose fatal in forty-eight hours survived after an injection equal to $\frac{1}{1000}$ part of their weight six hours afterwards; the same treatment twelve hours afterwards was ineffective.

This is the principle of the serum treatment of diphtheria in children, which in many instances has given such happy results. The anti-toxin is not of uniform strength in all cases, a fact which explains the alarming and even fatal symptoms occasionally seen.

The dose must be graduated according to the virulency of the serum, the weight of the subject and the time elapsed since the introduction of the poison.

The following illustration will show the manner of immunization: Horse, seven years of age, weight 900 pounds. Serum very active; $\frac{1}{10}$ cc. killed a guinea pig in forty-eight hours. Injected hypodermically in the neck or behind the shoulder.

1st day, injection of $\frac{1}{4}$ cc. toxin ($\frac{1}{10}$ iodine); no reaction, local or general.

2d day, injection of $\frac{1}{2}$ cc. toxin ($\frac{1}{10}$ iodine).

4th, 6th and 8th days, injection of $\frac{1}{2}$ cc. toxin ($\frac{1}{10}$ iodine).

13th and 14th days, injection of 1 cc. toxin; ($\frac{1}{10}$ iodine); no reaction.

17th day, injection of $\frac{1}{4}$ cc. pure toxin; slight œdema, no fever.

22d day, injection of 1 cc. pure toxin; slight œdema, no fever.

23d day, injection of 2 cc. pure toxin; slight œdema, no fever.

25th day, injection of 3 cc. pure toxin, slight œdema, no fever.

28th day, injection of 5 cc. pure toxin; slight œdema, no fever.

30th, 32d and 36th days, injection of 5 cc. pure toxin; slight œdema, no fever.

39th and 41st days, injection of 10 cc. of pure toxin; slight œdema, no fever.

43d, 46th, 48th and 50th days, injection of 30 cc. pure toxin, œdema marked, disappearing in forty-eight hours.

53d, 57th, 63rd, 65th and 67th days, injection of 60 cc. pure toxin, œdema marked, disappearing in forty-eight hours.

72d day, injection of 90 cc. pure toxin; œdema marked, disappearing in forty-eight hours.

80th day, injection of 250 cc. pure toxin; œdema marked, disappearing in forty-eight hours.

TETANUS.

The toxin of tetanus is very active. A healthy horse has been destroyed by $\frac{1}{10}$ cc. (2 drops). Horses can be immunized against tetanus in the same manner as against diphtheria. The toxin pure, heated to 65° C. or mixed with iodine is injected in repeated and gradually increasing doses at intervals. The animal thus becomes so "accustomed" to the poison that 250 to 300 cc. can be given at a single injection, enough to destroy 2,500 horses (Nocard).

This serum is preventive and curative; it can be used as a vaccine or a therapeutic agent. Injected under the skin of a tetanic subject it is efficacious only in proportion as the time elapsed since the infection has been short. I have no statistics of this treatment in a horse, but hope to be able to give it a trial. It is useful as a preventive only when the virus, or shortly afterwards, is introduced into the circulation. Unlike diphtheria, tetanus is not recognized until the system is saturated with the poison, then no treatment is of much avail.

The serum may be recommended as a preventive in places where tetanus is almost epizootic, or in certain operations and wounds of the extremities which are frequently followed by tetanus, in addition to the regular surgical treatment. For

this purpose Nocard injects under the skin, behind the shoulder, 10 cc. of anti-toxin serum repeated in two weeks.

Let me suggest peroxide of hydrogen as a local dressing in wounds of the extremities in particular. This preparation freely gives off oxygen, and the tetanus bacillus, which is confined to the seat of traumatism and does not enter the circulation, cannot live in a medium exposed to oxygen.

PHYSICAL DIAGNOSIS.

By Jacob Helmer, D.V.S., Scranton, Pa.

A Paper read before the Pennsylvania State Veterinary Medical Association at Cresson Springs, Sept. 3, 1895.

Physical diagnosis is the process of distinguishing diseases by their physical (objective) signs, without recourse to subjective symptoms. It depends on scientific methods of physical examination as inspection, auscultation, percussion, palpation, mensuration and succession, assisted by any mechanical aids or instruments that may, by extending the power of physical senses, be useful in detecting the signs of disease. Its conclusions are confirmed by clinical observation and the autopsy.

A paper limited to the time of a brief essay cannot apply the idea of this subject to the variety of diseases of the organs and tissues found in the animal body. We therefore select a group: The *pulmonary diseases of the horse*, and confine this article to a discrimination of them by the methods of physical diagnosis.

The value, comparatively, of the methods of physical examination is less in the veterinary than in the human practice of medicine. The anatomy of the horse's chest renders thorough physical examination extremely difficult. It is not easy to listen and hear sounds through such a thick wall. The voluntary movements of the skin over the panniculus carnosus muscle interferes. The usual restlessness of the animal and the awkward attitude of the examiner are among the obstacles to be overcome.

Inspection.—This signifies the use of the sense of sight to

detect physical signs. Inspection of the exterior of the chest reveals its form or shape, and the number and character of its movements. We need not dwell upon the idea of *Form*. It generally indicates in the horse degrees of vital capacity consistent with excellent health. Tubercular tendency or disease in the human family renders study of the form and size of the chest practical and necessary.

The movements of the chest are of great importance since they constitute the first steps of the act of respiration, and all other steps depend on them. A respiratory act consists of an inspiration and expiration and a pause. This cycle is completed by a contraction and expansion of the chest walls.

In health and at rest the movements of contraction and expansion are normal in number and character. When above normal number they are frequent, as during exercise. Frequency of movement not caused by exercise or thermic conditions is a sign of disease. Infrequent respiratory movements are abnormal and are usually due to morbid changes in the brain or the action of narcotic poisons.

The movements of the chest walls may be partial or complete. A partial or limited movement of contraction signifies shallow respiration and the use of little air in the lungs. A complete or extended contraction indicates powerful and deep respirations and the change of much air in the lungs. These characters may be both frequent and infrequent.

The natural rhythm of the movements may be disturbed; hence these may alternately be regular and irregular. Again, the relation existing between the thoracic and abdominal movements in health may be broken. When by conditions of disease constriction of the thoracic muscles and diaphragm occurs, thus lessening their normal movement and amount of work, these movements in the assisting abdominal muscles become increased. This is well marked in pleurisy, where the abdominal muscles are brought to perform an unusual amount of work, while the thoracic muscles are more or less fixed on account of pain in the inflamed pleura. In peritonitis, where the pain is felt under the region of the abdominal muscles, these become fixed and the normal movements of

the thoracic muscles are increased. Inspection in pleurisy with hydrothorax notes an increase in the size of the lower part of the chest. The attitude, breathing and facial expression of the animal denotes pain. The abdominal furrow or ridge, the extent to which the abdominal muscles are brought into use. Inspection notes the double movements of the abdominal muscles in pulmonary emphysema, and assisted by the thermometer, it notes the rise and fall of animal heat.

Palpation.—This in medical language denotes the process of examining morbid conditions by the sense of feeling or by touch. By it we recognize tenderness, resistance, fluctuation, pain, the presence or absence of normal animal heat, also impulse from movements of an internal body or organ. Subcutaneous emphysema is detected by laying on the hand. It detects a crackling sensation under the skin, caused by the movement of air in the cellular tissue. By palpation we note the character of tumors as fibrous, osseus, granular, soft, hard, or fluctuating. Palpation is useful as an aid to inspection and percussion. By it we note difference in resistance as well as of sound in percussion. Application of the hand to the chest informs us of the number and force of the beats of the heart, the shape of the chest walls, their movements or number of respirations and the character of them. We note sensitiveness to pain on pressure, and sometimes the friction murmur or pleurisy.

Mensuration, or a system of the measurements of the chest as an aid to diagnosis, is not commonly practiced by veterinarians. It might be useful in the study of pleurisy with hydrothorax in the horse if the diseases were unilateral, as in man. But all we can learn by any system of measurements, however skillfully applied to the chest of the horse in pulmonary and cardiac trouble, may be known from the other methods. The first measurement, if made with a graduated tape, around the body from a point slightly posterior to the withers. At least there, such measurement should be made at a few inches distant from each other. These measurements should be taken at the end of a complete inspiratory and expiratory movement; at least in the same stage of the

respiratory movements. A second series of measurements are made, beginning at a given point on the withers to the commencement of the cartilage of the false ribs, beginning with the eighth. Again from the lower end of the third rib to the same points. Lastly, along the middle of the chest, from the posterior border of the shoulder to the margin of the last rib. These measurements are made at the same points on both sides of the chest, and at the same point of contraction and expansion of the chest walls.

Of the methods of physical examination applied to detect diseases of the chest, the most important ones to us are auscultation and percussion. Before applying these methods let us, for convenience and accuracy, divide the chest into three regions; an anterior and two lateral. The lateral regions may be further sub-divided in nearly three equal parts by drawing two horizontal lines across the chest. These subdivisions are a superior, a middle and an inferior third. The superior third contains lung substance, closely in contact with the internal wall. The middle third contains much lung substance; also the large bronchial tubes in its anterior part, and the large blood vessels at the base of the heart. In the lower third there is less lung substance, but in its anterior part the heart is principally situated opposite the third, fourth, fifth and sixth ribs. This area, sometimes designated the triangular space, is covered by the forearm and its extensor muscles. The limb must be pulled forward in order to examine the region over the heart.

Auscultation is the art of listening over a part to detect abnormal sounds and especially the condition that gives rise to them. It is the most important method of physical diagnosis. It was discovered by Reno Theophile H. Laennec, who lived from 1781 to 1826. It was introduced into veterinary practice by Delafond and Leblanc. The facts elicited by auscultation and percussion and their verification by post mortem examination revolutionized the knowledge then in existence of the disease of the chest and began an area of exact demonstration.

Auscultation is of two kinds, mediate and immediate. In

the former, an instrument, the stethoscope, is placed between the ear and the part to be examined. Immediate auscultation is when the ear is laid directly against the part. The veterinary practitioner should depend upon the ear only. An excuse for the use of a stethoscope is afforded when parts have been blistered, but a handkerchief may be laid between the ear and the part. To use the stethoscope successfully, it is necessary to press the chest-piece quite hard against the parts, an action which the animal resists. Applied to the chest, the object of auscultation is to discover sounds, normal or abnormal, in connection with the lung substance, pleura or bronchi. It also notes absence of sound and sounds conducted from other parts.

The class of normal sounds heard over the lungs are bronchial breathing and the vesicular murmur. Bronchial breathing is normal when heard in the middle and upper third of the chest. The respiratory murmur is normal when heard over the middle portion and less distinctly over the superior and inferior thirds. Bronchial breathing sounds like a moderate current of air passing steadily through a tube or out of the nozzle of a bellows. It is closely imitated by making the sound of the letter K in the roof of the mouth. It is best heard over the anterior part of the chest at the bifurcation of the trachea. In health, at the sides of the chest it is apt to be lost in the vesicular murmur. The vesicular murmur is a sighing sound. It may be plainly heard over the chest of bovine, or over the human chest. It is likened to the sound produced by the wind blowing steadily through green leaves. Bronchial breathing and the vesicular murmur are abnormal when heard in places other than in health. In pneumonia the vesicular murmur may be lost in the middle third and heard more plainly in the superior and inferior thirds of the chest. It then becomes an abnormal sound. Bronchial breathing is also an abnormal sound when it is heard plainly in the upper and lower third, and lost in the middle third due to blocking of that part of the lung with exudate. These two sounds may be increased or diminished in their normal situation. In pneumonia, one part of the middle third may be

blocked with exudate and the vesicular murmur lost in that part; but it will be found increased in other parts of the middle third not diseased.

We shall next consider the class of abnormal sounds known as rales. These are moist and dry. Moist rales are sub-divided with mucus, submucus and subcrepitant. Dry rales are divided into sonorous, crepitant and sibilant. The sonorous rales are heard over the large bronchial tubes in the middle and upper portions of the chest, in the first stage of bronchitis. The sibilant rale is heard in the upper and lower portions of the chest over the small bronchial tubes. It is a hissing sound. Bronchitis is a bilateral disease, hence these sounds may be heard over both sides of the chest, both on inspiration and expiration. The crepitant rale is heard in the first stage of pneumonia principally over the middle portion of the lung. It is a snapping sound and is closely imitated by stroking the hair of a cat in the opposite direction than it lies. We may not see our patients early enough to hear this rale. It is caused by the air rushing into the air cells and separating their walls which have become more or less adherent by the exudate. Mucus rales are a bubbling sound, heard in the upper portion of the chest on both sides. It sounds like minute bubbles due to blood, pus or serum, or an admixture of them. They are heard both on inspiration and expiration. If heard on the lower portion of the chest they are called sub-mucus rales. These bubbling sounds change their place as the material moves along in the bronchial tubes. The sub-crepitant rale is heard in croupous pneumonia. Here we have the exudate in the air cells changing with liquid. The air passing in and out gives rise to a minute bubbling sound. It is heard in the third or revolving stage of pneumonia, both on inspiration and expiration.

Other Sounds.—Gurgling sounds may be heard in the second stage of pneumonia. It is due to the movement of fluid in the large tubes, and heard on inspiration and expiration. It is heard at the anterior part of the chest over the trachea and bronchi. Another sound is *metallic tinkling*. It is heard over the chest and at the nostrils, in pleurisy. It is

heard during inspiration and expiration. It is not often heard at the chest. It is caused by drops of fluid falling into a collection on the bottom of the cavity. It may also be caused by the bursting of a bubble on the sides of a cavity, or by the imprisonment of a drop of water on the wall of a cavity. Metallic tinkling is pathonomonic in pleurisy.

Percussion is the process of striking a part with the tips of the bent fingers, in order to elicit sounds, upon the character of which depends the condition of the tissues underneath. It was discovered by Leopold Avenbrugger, a Vienna physician, who lived from 1722 to 1809. He practiced percussion only. He first began the study of sounds as indications of morbid character. The idea was introduced into France by Corvisart in 1821. Mediate percussion was suggested by Piorry in 1828. It is customary in percussion to lay the middle finger, or two fingers of the left hand, upon the part and stroke with the finger-tips of the right hand. Every physician has his own way of percussing. The striking should be a wrist movement, not a forearm movement. The blows should not be too heavy and be made with discrimination. To percuss well is an art which one can only become proficient in by long practice. Sounds elicited by percussion vary in intensity, quality, duration and pitch. Intensity means loudness; quality, the kind of sound; duration, the length; and pitch, the degree of sound. Percussion sounds are due to vibration of air in the air cells, and of the chest walls. Percussion on a healthy subject shows that the results are not the same on both sides of the chest. Over the plane of the upper third on the right side the sound is the same to the eleventh rib back. Over the middle third, on both sides, the degree of resonance is about the same from the sixth to the twelfth rib. Behind this it is dull on the right side and more resonant over the left side. On the lower third percussion is clear, back to the tenth rib, where it becomes more dull. On the left side, dullness is found over the thirteenth rib back. So in the middle portion we find increasing pulmonary resonance, and in the superior and inferior portions we find diminished pulmonary resonance.

Resonance is divided into two kinds, pulmonary and tympanitic. Pulmonary resonance is that obtained by percussing over a healthy lung. Tympanitic resonance is heard when there is air inside of a cavity. It is a ringing metallic sound when caused in this manner. In percussion, sounds are increased, diminished or absent. In the degree that it is diminished it is a dull sound. If absent it constitutes flatness. Flatness is due to effusion of fluid into a cavity. Pulmonary resonance is increased in left lung if the right one is closed. As the sound depends on the amount of air in the tissues when one part of the lung is blocked, adjacent parts will become more resonant. Pulmonary resonance is diminished when there is less than a normal quantity of blood present, or where there is exudate, or where there is an increased amount of blood in a part, as in congestion of the lungs, and in effusion into the interlobular connective tissue.

Having now considered the various methods of physical examination and described the physical signs afforded by them, let us give attention to a brief description of the morbid anatomy of the most common pulmonary diseases with the physical signs found connected with it. Then we shall see clearly how to make a differential diagnosis of these conditions.

Pneumonia.—This disease is divided into three classes: croupous, catarrhal and interstitial. Croupous pneumonia is the one we commonly meet. It is an acute inflammation of the vesicular structure of the lung followed by temporary blocking of the air cells with exudate and exclusion of air. In the first stage there is an increased amount of blood in the capillary vessels. This causes pressure on the air cells and diminishes their calibre; subsequently comes dryness, then secretion of plastic material blocks the air cells. The tissue becomes the color of liver, being engorged with bloody serofibrinous exudate. The third stage, or that of resolution, is marked by the material becoming milky white; there is now again some air in the cells. Absorption goes forward. The physical signs of croupous pneumonia in the first stage appear in about twenty-four hours. If the disease is anterior

or central it may take two or three days. *Inspection* notes diminished movement of the chest wall on the affected side. On both sides if it is double pneumonia; also the increased use of the abdominal muscles. Percussion in first stage gives some dullness of diseased part. Central pneumonia may not yield dullness until advanced to the second stage. *Auscultation* in first stage is not satisfactory until exudation has taken place. Then we hear the crepitant rale. It lasts but a few hours. *Inspection* in second stage shows the wall over the affected lung to be more quiet than in the first stage. Movement of the normal side increased. *Percussion* yields dullness over the diseased part of the lung while normal portions yield increased resonance. *Auscultation* in the second stage yields no vesicular murmur over the affected portion. The crepitant rale has disappeared and bronchial breathing taken its place. The more condensed the lung tissue, the plainer the bronchial breathing becomes. *Percussion* in the third stage yields less and less dullness until the exudate has been absorbed. *Auscultation* in this crepitant rale may be heard, then the sub-crepitant as the exudate becomes more liquefied, and finally the vesicular murmur returns. Should purulent infiltration set in the temperature remains high ; the pulse is frequent and weak, prostration is marked, bronchial breathing continues; also dullness and percussion. A discovery of minute gurgling rales may complete the diagnosis. Termination in gangrene is known by great prostration or collapse. We look for the gangrene odor.

Chronic interstitial pneumonia or pulmonary tuberculosis in the horse is rarely seen, but may be in old horses. It may arise from the extension of an ordinary pneumonia. It is accompanied by formation of tubercle or caseous material.

Catarrhal pneumonia is always secondary, due to the extension of the inflammation from a previous bronchitis. Acute bronchitis is an inflammatory condition of a part or the whole of the mucous membrane of the large bronchial tubes. In the first stage we find congestion of the mucous membrane. It becomes dry and swells. In the second stage

we have a catarrhal exudate. The glands are enlarged, mucous membrane swollen and tubes constricted.

Auscultation in the first stage finds the sonorous rale. It is heard on both sides, both on inspiration and expiration. The sound is best heard over the middle third between the sixth and twelfth rib. The sonorous sound is due to the dryness of the tubes in connection with their diminished calibre. In the second stage, when the exudate is thrown out, we get a mucus rale, both on inspiration and expiration. The sound comes and goes. The secretion may or may not be expectorated. We may not always hear the mucus rale. *Percussion* in the first stage usually gives an increased resonance. In fat horses it is almost impossible to distinguish. In the second stage the change in resonance in percussion is slight.

In *capillary bronchitis* percussion yields increased resonance on both sides, in both stages, unless in old animals. There is auscultation, a mucus rale and hissing sound. In the second stage we find sub-mucus rale. Old animals may not be able to cough up the mucus which may block some of the tubes.

Asthma.—This morbid condition is a neurosis. It gives rise to paroxysms of dyspnœa at recurring intervals. It is probably due to constriction of the circular fibres of the bronchial tubes, which cause a wheezy breathing while the paroxysm continues.

Pulmonary Emphysema.—This is a condition characterized by loss of elastic power in the air cells. The walls become stretched and contain more than a natural amount of air. There are two varieties: the vesicular and the interstitial. In the former, the excess of air in the air cells; in the latter it is in the connective tissue between the cells. The tissues may become ruptures and the cells come together, thus forming large bladders. *Inspection* notes that the chest walls are enlarged. The abdominal muscles are brought into use in proportion as the disease has advanced. The expiratory movement is much prolonged, and consists of three parts. A movement, pause, then another movement. *Percussion* gives increased resonance over portions of the chest. *Aus-*

cultation finds a variety of sounds. In a general way we may say the sounds are of a crepitant, sibilant and sonorous character.

Broken Wind.—This name is applied to a condition of difficult respiration closely resembling that of pulmonary emphysema, a spasmodic breathing with a short inspiration and a prolonged and double expiratory movement. The malady is of nervous origin and asthmatic in character, lacking the recurring paroxysms, but exhibiting a more or less continuous dyspnœa. In this disease the structural changes have taken place in the circular fibres of the smaller bronchial tubes. This muscular fibre is in a state of constant contraction, having become paralyzed from continuous irritation of the nerve filament supplying the muscle. This irritation is of gastric origin. The integrity of the aveolar passage and air cells is impaired in time through innutrition. Degeneration follows with production of pulmonary emphysema.

Pleurisy.—This is an acute inflammation of the serous membrane lining the chest cavity, forming the mediastinum and covering the lungs. It may be partial or general. The first pathological character is congestion of the blood vessels of the pleura and the sub-serous connective tissue. At first the membrane is dry. This is followed by a fibre-serous exudate. The pleura becomes œdematous in patches. It becomes thickened, loses its polished appearance, becoming dull and rough. The fibrinous lymph of the exudate forms membranes or deposits on the pleura. The serous portion of the exudate falls to the bottom of the cavity. The false membrane may build up and form thick fibrous structures. These may be cartilaginous or osseous in structure. Such structures are raw and are not due to a simple exudate, but a proliferation of the cell elements of the pleura. The liquid exudate is absorbed by the lymphatics. *Inspection* in the first stage of pleurisy notes that the respirations are short and thick, especially the inspiratory act. Evidently the act of respiration causes pain. The abdominal type of breathing is increased. The chest is enlarged in the latter stage and may be unhyed. Auscultation in the first stage gives the friction

murmur, a sound similar to that obtained by rubbing together the palms of the hands. It is caused by the now swollen membranes coming in contact with each other in the movements of the lung. *Auscultation* in the second stage denotes loss of respiratory murmur in the inferior third of the chest and upwards in proportion to the depth of the effusion. *Percussion* in the first stage yields a slightly diminished pulmonary resonance, but dullness increases as the disease advances. Percussion over the effusion yields a flat sound. Above the fluid line there may be a semi-tympanitic resonance which will be be referred to elsewhere.

Œdema of the Lungs.—This is a condition characterized by an effusion, serous in character, into the air cells and possibly into the surrounding connective tissue. It is a bilateral condition. It is a sequel of some debilitating disease. It may appear with congestion of the lungs. It happens suddenly. Inspection notes difficult but feeble respiration. There is no elevation of temperature. *Percussion* yields dullness. Auscultation may elicit moist rales.

Pulmonary Congestion.—This condition is caused by a sudden influx of an increased quantity of blood into the pulmonary vessels. Inspection reveals dyspnœa, frothy expectoration tinged with blood. Animal may appear excited or depressed. On *auscultation* the cardiac sounds are increased. On percussion there is loss of pulmonary resonance on both sides of the chest. It is a bilateral malady. Autopsy reveals the lungs deep dyed and crepitant.

Differential Diagnosis.—The differential diagnosis of these various diseases of the lungs has made itself apparent in what has been already said of them. It only remains to restate the distinctions in a concise manner.

Croupous Pneumonia in the first stage is distinguished from bronchitis in the same stage by the former having a crepitant and the latter a sonorous rale. In bronchitis there is no consolidation of lung tissue as in pneumonia. It is a bilateral disease. It yields mucus rales in the second stage and increased resonance on percussion. All these are the opposite in pneumonia. Croupous pneumonia is known from capil-

lary bronchitis by about the same signs as bronchitis. In capillary bronchitis we have in the first stage a hissing sound, the sibilant rale. Croupous pneumonia is known from pleurisy by the friction murmur of the latter in the first stage. In the second stage is flatness on percussion. The upward limit of this loss of resonance is bounded by a horizontal line. Pleurisy with effusion is a bilateral disease in the horse. In pleurisy we have the increased abdominal breathing and abdominal furrow.

Pneumonia is distinguished from asthma by one being febrile and the other a non-febrile disorder. Pneumonia is regular in its course. Asthma comes in paroxysms. Asthma is characterized by a wheezy breathing performed with much labor during the paroxysm. In pneumonia the breathing is panting in character.

A paroxysm of asthma is distinguished from an attack of congestion of the lungs by the wheezy breathing of the former. In asthma, on percussion, pulmonary resonance is greatly exaggerated, and auscultation yields an increase of the respiratory murmur and sibilant rales. These are of the opposite character in congestion of the lungs. There is little or no fever in asthma, and in a severe attack the animal coughs frequently. Asthma may be confounded with bronchitis in the first stage, but the high temperature of bronchitis and the congestion of the schneiderian membrane and conjunctiva will establish the difference.

Congestion of the lungs may be distinguished from the congestive stage of pneumonia by the latter having a very high fever and ushered in by a chill. Pneumo-thorax, or air in the chest cavity, may be distinguished by well marked tympanitic resonance on percussion. It must not be confounded with the condition that sometimes exists in pleurisy or pneumonia that gives rise to a diminished tympanitic resonance. In pneumonia a tympanitic sound is transmitted through a portion of consolidated lung on heavy percussion in some rare cases. It is supposed to be caused by the vibration of air in large bronchus or in a cavity. Again, in pleurisy with much effusion, we find a tympanitic reso-

nance above the fluid line. It may be caused by relaxation of the air sacs and diminished tension of the lung tissue. Finally, there is no royal road to physical diagnosis. Its problems must be worked out for oneself

Originality is not claimed for this paper. The ideas are modified from personal experience, observation and mode of expression. My object has not been so much to teach as to refresh you in the matters which above all others combine to make the successful diagnostician.

REPORTS OF CASES.

DISEASE OF THE HEART.

CASE II.

Acute Endocarditis of the Horse—Recovery.

Written for the American Veterinary Review by J. A. Couture, V.S., Quebec.

Practitioners cannot be enough on their guard concerning the diagnosis of diseases of the lungs of all domestic animals, but specially horses and dogs, for they are very apt to take diseases of the heart for those of pulmonary organs. Acute endocarditis, hypertrophy, heart failure may easily be mistaken for diseases of the lungs when the practitioner does not always bear in mind that such errors are liable to occur.

This case is interesting because it illustrates the above remarks and because of its severity and recovery.

History.—The patient is a bay mare, half Clyde, 6 years, 15 hands, 1,300 lbs., used on the bus of the Florence Hotel of this city. She had been bought at Montreal about 2 months ago, and it is very likely that she has done very little work yet. Has always been in good health since she is here. She is worked very hard and very fast. On the 16th of August, 1893, she works as usual and seems all right; the next morning refused her feed and could hardly follow her mate on the bus. She is brought to the hospital at noon the 17th of Aug.

Clinical examination.—Temp. 106½, respiration 20, pulse 75, small, quick. She does not look very sick; coughs a little; visible mucous membranes are about normal, though the conjunctiva is rather yellowish.

Auscultation and percussion.—Nothing abnormal on the right side; on the left side absence of vesicular murmur, opposite the whole anterior and medium parts of the lung; dull sound to percussion of those parts; but the most attentive auscultation does not reveal the presence of *crepitating rale* (rale crepitant humide).

Diagnosis doubtful, but probably *right pneumonia.* That was a mistake, and I confess that such an error should not have been committed. I will explain it by saying that I was in a hurry, that I neglected to explore the heart (there are two modes of exploring the chest, one used for respiratory organs and the other for cardiac diseases. I will have an opportunity in the near future to be more explicit on the subject). The color of the mucous membranes, the absence of crepitating rale and the very high temperature were, it is true, negative symptoms; but, on the other hand, the frequent breathing, the absence of respiratory murmur and the cough lead me to think that *it might be pneumonia.* I insist on these points because I am of opinion that the confession of an error, or of failure in treatment, is as producive of good results to *confreres* as anything else.

Treatment.—Antifebrine, ½ ounce doses every 6 hours.

August 18th.—The next morning my patient is much worse. Pulse 90, very small; respiration 20; temp. 106½°. Refuses all food; great prostration; chest is again explored for pulmonary disease. Dull sound at percussion, of a very large surface of the lung, even larger than the day before, no crepitating rale and no vesicular murmur. I am rather puzzled and can form no opinion yet of the case; I begin to believe that there is no disease of the lungs. A large and strong sinapism is applied to belly and chest and the patient is left alone till 5 p. m. At 5 p. m. that day she begins to perspire profusely, such perspiration that I have never seen anything like it before or since; the perspiration is falling to the ground as if the patient had been dipped in water. Not much importance was attached to the fact as I attributed it to the sinapism. The patient has eaten nothing since noon the day before.

August 19th.—Very bad. Temp. 106°; pulse nearly imperceptible; complete immobility; takes absolutely no food. Exploration renewed; dull sound opposite two thirds of the surface of the left lung; the beatings of the heart are violent, strong; the first shock is accompanied by a strong bellowing sound (bruit de souffle); the first shock of the heart is double. The beatings of the heart and the bellowing sound can easily be heard as high as near the vertebræ and over at least two-thirds of the horizontal surface of the chest. At the right side both the cardiac beats and the bellowing sounds are also heard on a large surface.

The diagnosis is easily made then; it is a case of *acute endocarditis.* Had I explored the chest for cardiac disease at the first examination, or at least at the second, I would have easily made a correct diagnosis, whilst on account of not having done so it was only when the symptoms of the disease were too prominent that I discovered its true nature.

Prognosis.—Fatal. Here again I was mistaken, for the patient made a good recovery.

Treatment.—It consisted of salicylate of soda, 4 drachms; digitalis in powder, 15 grs., twice a day; alcohol, 1 ounce, every four hours with 4 ounces of water. A very peculiar circumstance of the case is the extremely profuse perspiration which began at 5 p. m. on the 18th of August and lasted continually till late during the night of the 20th, and ceased only during the day of the 21st. The temperature at 8 p. m. the 19th is 105°; no food has been taken during the day; absolute immobility.

August 20th.—Temp. $105\frac{1}{2}^{\circ}$; pulse a little stronger; great prostration, can hardly stand, refuses all food; perspires all day.

Same treatment.

No change is noticeable in auscultation.

August 21st.—Perspiration continues, but less profuse; temp. 105°; pulse as yesterday; eats nothing yet. The cardiac beats are not so strong and not audible on so large a surface. Towards the evening the perspiration decreases; she dries up except under the belly, on the neck and in the flanks.

Same treatment.

August 22d.—Morning. Temp. $106\frac{1}{2}°$. Heart beats even more violently than ever before; extreme prostration; at noon, temp. 106°; at 6 p. m., temp. $105\frac{2}{5}°$; at 11 p. m., temp. $104\frac{4}{5}°$. The beatings of the heart have decreased gradually in strength, so has the bellowing sound, at 11 p.m. she is dry and she eats a little oats. The alcohol, salicylate of soda have been kept on, but the digitalis powder has been discontinued since last night.

August 23d.—Morning temp. 105°. The heart-beats become gradually less violent, the bellowing sound (*bruit de souffle*) has disappeared. She takes a good feed of oats and some hay. I consider the crisis over.

Temperature at 11 a. m., 104°; resp. 18; pulse stronger, 80 per minute.

Temperature at 6 p. m., 104°; resp. and pulse as at 11 a. m. Same treatment.

August 24th.—Morning temp. 104°; pulse 60 and strong enough; resp. 15. The most careful auscultation reveals no (*bruit de souffle*) bellowing sound. The cardiac-beats cannot be heard on the right side; they can be heard only on the left side if auscultated especially for cardiac diseases.

August 26th to September 3d.—The temperature keeps to 102°; pulse 50, good; resp. 12. Appetite good, the animal eats everything that is put before her. She is allowed all the oats she can eat and presently takes from 15 to 16 lbs. a day. Nothwithstanding this she is still very weak, can hardly move in her box without being supported. There is no reason to be surprised at that considering the crisis through which she has taken no food (from the 17th in the morning till the 22d at night). Since the 26th she is administered twice a day: iodide of potassium 1 drachm, salicylate of soda 2 drachms, pulv. digitalis 15 grs.

From the 3d to the 18th of September.—Temp. 100°; pulse 42; resp. 12. Appetite very good, eats 18 lbs. of oats a day and all the hay she can; cardiac beats normal, but *a slight* (*bruit de souffle*) *bellowing sound is heard to the left when auscultated especially for heart disease.* She gradually gets stronger and lively.

September 20th.—She returns to work apparently cured, but careful auscultation reveals yet the bellowing sound at the left side. It is very likely that this animal will remain, for a time at least, if she is worked as before, with a slight alteration of the mitral valves. The owner is notified to either spare her or get rid of her. He sold her a few weeks after and I lost sight of her. I have selected this case, amongst the many others in my note-book, on account of its being typical. Of course, acute endocarditis does not always present itself with such severity and is sometimes quite difficult to diagnose, unless the practitioner is always on the look out, which is improbable. This is true notably in the horse and dog when it is easily mistaken for pneumonia. But with a little attention and care in examining the patient, in making a rule to never let a supposed case of pneumonia pass before the heart is examined, in taking into account the color of the conjunctiva, the nature of the pulse, the elevation of temperature and the clinical analysis of the symptoms revealed by exploration of the lungs, the mistake can be avoided.

DEATH FROM HEART FAILURE.

By W. H. DALRYMPLE M.R.C.V.S., Baton Rouge, La.

The subject of the following short record was a five-year-old bay harness gelding standing 15.3 or 16 hands high.

I was called to see him at 10 o'clock, on the morning of May 10 last. Found his temperature $106\frac{2}{5}$ F. Pulse quick and frequent (number of beats not recorded) but did not notice any irregularity or intermittency. Respirations hurried (number not recorded). Expansion very slight in right wall of chest. On auscultation, finer sounds lost, larger bronchial sounds audible. Pneumonia treated for, the details of which need not be repeated here.

At 6:30 P.M., temperature 106 F.; at 9 P.M., temperature $105\frac{4}{5}$ F.

On May 11th, at 6:45 A.M., temperature 104 F.; 3 P.M., $104\frac{4}{5}$ F.; 6 P.M., $104\frac{1}{5}$ F.; 9.30 P.M., $104\frac{1}{5}$ F.

On May 12th, at 7:30 A.M., temperature $102\frac{4}{5}$ F. At 11

A.M., the owner's wife hearing the horse nicker as if wanting something, gave him a saucerful of sugar, which he licked up with avidity. Ten minutes later, the coachman came to the house and reported the horse dead. No one could have been more surprised than myself. So far as the pulmonary symptons were concerned the animal was progressing as favorably as could be expected. The first thought that crossed my mind was, could he have been asphyxiated by the sugar forming with the saliva a coagulum in the throat, but there were no signs of expectoration nor even a struggle, the horse was lying just as he had dropped. I then of course thought that so sudden a demise must be due to heart-failure, but considered it singular that I was not made suspicious of it by the character of the pulse.

About three hours after death I made a post-mortem examination, but as the facilities and surroundings were of the most unfavorable nature I did not make as careful work as I would have liked and for which I afterwards felt extremely sorry.

As indicated by the ante-mortem symptons, the right lung was affected. The *heart*, however, exhibited the most interesting pathological condition, and it is on this account that I considered a brief record of the case would be of some interest to the readers of the REVIEW.

On making longitudinal and transverse incisions into the cavities on each side of the heart, I had presented to me the fibrino-fatty coagula (seen in the illustration) one on either side passing from the auricle through the auriculo-ventricular opening to the ventricle. One of the coagula seemed unattached, and which I simply lifted out of its position, the other was very slightly adherent by its upper extremity. The illustration shows the specimens denuded of blood-clot and considerably shrunken from being in alcohol, and although I did not take the weight, the dimensions can be fairly estimated by the measure placed on one side.

I regret very much for my own sake, and that of others, that the meagreness of the only description which I am able to give of the whole pathological condition, is due to my not

making a careful examination of the valves and the interior of the heart generally. No doubt there must have been extensive endocardial lesions to produce such enormous deposits. How the animal existed in apparently good health for a considerable length of time, which he seems to have done, under such conditions is, to say the least of it, somewhat astonishing. The valves must have adapted themselves to the neoplasms so as to in a measure perform their functions. The lung affection was in my opinion secondary to the cardiac and brought about by overexertion, and the blood being partially dammed up in the lungs by the coagula preventing its free flow from these organs. The coagula were both organized and had undergone fatty degeneration, showing that they must have been in existence for some time. I had hoped to be able to get a microscopic section of the tissue, but have failed to do so in time.

To me this case teaches a valuable lesson. That in all subjects with pulmonary trouble, the rule should be to auscultate the cardiac area, not that this animal's life could have been saved by so doing, but the client could have been made aware of the probability of such an unfavorable termination before the cause was revealed on post-mortem. I think that, whenever practicable, autopsies should always be made; they are invaluable to the practitioner by laying bare plain facts which often upset stereotyped theories, point out our shortcomings and add to our general knowledge, besides frequently bringing about a substantial saving to our client, as in this case—the horse was in his owner's possession for only ten or twelve days—having "posted" him. I was able to give my certificate that the animal died from the condition of the heart above alluded to, which must have been in existence long before he was last purchased, with the result that my client had the half of the purchase price refunded. Had the post-mortem not been made, it would most likely have been presumed that the horse died from pneumonia, the owner would have lost the full price, with my fee added, which latter I may state was also refunded by the dealer.

ŒSOPHAGOTOMY IN A THREE-YEAR-OLD FILLY.

By JAMES M. REED, V.S., MATTOON, ILL.

On June 12, 1893, I was called to the residence of Lewis F———, a liveryman, about dark. Upon arriving found my patient badly choked, having been in this condition about six or seven hours. She had given up her struggling endeavors to remove the obstruction, which was located about half way between the jaw and point of shoulder in the œsophagus. I tried to remove the impaction by every possible means of administering fluids, but all attempts failed. By consent of the owner I adopted œsophagotomy. Casting the filly on her right side, and with two assistants, one at the head, the other at the rope, I proceeded with the operation, the assistant at the head straightening the head out and holding it on the ground, or bed of straw.

I first opened the skin with a hooked knife, about two and one-half inches long, and then cutting down on to the œsophagus with the hooked knife, and found a finely crushed cob which seemed to be quite dry. Owing to my patient being very restless, I was forced to pick it out with my fingers, small particles at a time, the gash in the œsophagus being about two inches long. After the obstruction was completely removed I sewed up the wound in the œsophagus with catgut and then washed out the wound with antiseptic solution, sewed up wound in skin with linen thread and, removing the hobbles, the filly arose to her feet and I gave her some water, of which she drank two or three swallows freely. I tied her up in a box-stall for the night, and left orders to allow her no food but gruels, with small doses of potassium nitrate once a day. I washed the wound once a day with corrosive sublimate solution, and applied the following ointment: terebinthinæ vulgaris, aqua ammonia, of each ij ℥, olium lini xij ℥, applied night and morning, after washing.

June 14th. I saw the patient; temperature 102°, pulse slightly raised, respiration slightly raised; drank gruel freely, the wound slightly swollen.

June 16th. Saw patient; temperature 101°, pulse normal,

respiration normal; drank gruel freely; wound began to discharge; gave internal treatment as before, external application same.

June 19th. Saw patient; temperature, respiration and pulsation normal; swelling going down, drank gruel freely; wound healing nicely, and stopped medicine internally.

June 22d. Patient appeared lively, drank gruel, and wound rapidly healing.

I did not see patient until July 10, when the wound was completely healed and filly had been eating her regular food that day, for the first time. I discharged the patient from treatment with instructions to feed carefully for a few days.

This operation was performed after night with the light of one lantern on June 12th, 1893.

AZOTURIA.

By H. C. TERRY, D.V.S., Bristol, Bucks County, Pa.

As I have never written on any subject for the REVIEW, will endeavor to do so now; as I had a very peculiar case of azoturia in a very peculiar place—in a meadow with no shelter, with the exception of a kind of tent we built over him one night when it rained. Was nearly a half mile from any buildings.

The case was a bay gelding, twelve years old, 15.3 hands high, weighing about 1,200 lbs.; used for towing boats on a canal. He came down three days previous to his taking ill, and was stabled, receiving his regular amount of food three times a day. Was taken out on the evening of the third day and started up the canal. He soon became lame in one hind leg, which lameness, after a short distance, changed to the other leg, and afterwards disabling him from travel at all; so he dropped. This was about 9 P.M., on May 18, 1895.

I was called early the next morning; found the pulse and respiration accelerated; membranes of the eyes and nose congested, having a brownish tint; muscles of the loins rigid; urine high colored; slight convulsions; animal trembling somewhat, and diagnosed azoturia. I prescribed potassic

acetatis and fl. ext. buchu each ℥ij with spts. aeth. nit. ℥iv to be given in ℥iv doses every four hours. We were nearly a half mile from any buildings, as I said before, so it was impossible to get hot water for fermentations. Fortunately, I had some mustard with me, and plenty of water to mix it for we were along the canal. I applied it to his loins.

Ordering some straw and blankets after catheterizing my patient, I left to return in the afternoon, when I found no particular changes. Administered Oj ol. lini. The diuretic treatment was kept up to the end, but after the second day ℥i more of nitre was added to the mixture, giving the same sized doses every four hours, with a pint of linseed oil every second day. There he laid for six days, being catheterized twice daily; turned from side to side three times, daily; received his medicine every four hours, night and day. All this time he would eat and drink, but gruel or bran mashes were all that were given him. He regained his feet (for the first time from the time he dropped) on the evening of the sixth day, seeming much better. Since this date he has been improving (but it took a long while to heal the bed-sores, as you can imagine), until now he is being driven to a milk-wagon, and is all right with the exception of a spot on each hip where the hair has not grown in.

I thought this a very hopeless case after the third day; in a meadow, too, very damp, in the month of May; but I still kept on the treatment before mentioned, and am very glad he recovered, for I was a new business man in the place and it did me lots of good.

CASTRATION OF A LION.

By J. G. SLEE, Student American Veterinary College.

The subject, a Nubian lion, five years old, in Bentley's circus—operator, Dr. A. Shirk. The castration of our domestic animals is always an interesting operation to the student. The results can in a measure be definitely foretold, and any complications resulting readily treated. But when it comes to the "king of beasts" the operator must antici-

pate his results, his patient not being as readily secured and treated afterwards.

His highness having been firmly tied with ropes and chains in a manner safe to operator and patient alike, the doctor performed the operation, using the ecraseur and taking all the antiseptic precaution necessary.

The tunica vaginalis was found to be closely adherent to the testicle, and the spermatic cord unusually large and vascular for the size of the animal.

The severing of the cord was done very slowly, to avoid any profuse hemorrhage. The patient is doing well, and, like all the feline race, takes care of himself.

EXTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

THE INTRA-TRACHEAL INJECTION OF IODINE IN PURPURA HÆMORRHAGICA.

By W. H. Bloye, F.R.C.V.S., Plymouth.

In consequence of the generally improved hygienic condition under which horses in towns now as a rule live, cases of purpura hæmorrhagica are by no means as frequent as they were ten or twelve years ago, and the opportunities of testing new remedies have, of course, become proportionately rare.

In view of the frequently unsatisfactory results of all the older methods of treatment, in which category I include iron, turpentine, chlorate of potash, and even iodine, per orem, and further of the circumstantial account of Schaumkell's successes with the Dieckerhoff treatment quoted in the article translated by Mr. J. A. W. Dollar, I had at the time of reading this article determined to try the treatment at the first opportunity. Contrary to custom, the opportunity soon occurred. It has been my good fortune, chiefly perhaps as the result of a severe outbreak of influenza, to encounter four cases of purpura in little more than as many months—three of them concurrently. I adopted this method of treatment,

and the experiment has proved a most encouraging success, a success which, when added to that of Mr. Forgham, detailed in *The Record* of February 10th, cannot fail to be gratifying to Mr. Dollar.

In the cases recorded below, the intratracheal injection of iodine acted almost as a specific, indeed to such an extent that after the initial attempt—granting the surroundings to be as they should—one got to feel absolutely confident that the second dose would produce a beneficial effect, be the swellings and petechia of whatever intensity.

Case I.—A grey cob gelding, five years old, admitted July 23d, 1894. Head, limbs and abdomen all greatly swollen; petechia on schneiderian large and very dark, discharge of blood-stained serum from both nostrils; temperature 104.5° F., appetite nil. Gave an experimental draught composed of ol. tereb, tr. ferri perchlor., and ol. lini.

July 24th, 8 A. M.—Swellings more marked, especially about head, face and mouth, the greatly enlarged nostrils causing a very loud snore. Temp. 103.6.° Injected 6 drachms iodine solution into the trachea. (The whole of the injections above referred to are intra-tracheal.)

8 P. M.—Swellings generally move extensive, horse can scarcely be got to move, temp. 104.° Injected 18 drachms iodine solution.

July 25.—Swellings somewhat smaller and considerably less tense, breathing better, temp. 103.4,° drank milk and eggs freely. Injected 14 drachms iodine solution.

July 26.—Swellings greatly reduced, horse generally better, although during the day the temperature reached 104. Gave quiniæ sulph. one drachm and ferri sulph. two drachms in a ball, morning and evening.

July 27th.—Swelling returning. Injected iodine solution 12 drachms, and gave ball as above.

July 28th.—Considerably better. Gave balls containing iodine, iron and quinine, morning and evening.

July 29th.—Œdema again returning. Injected iodine solution, 8 drachms morning and evening.

July 30th.—Horse considerably better. Injected iodine

solution 6 drachms, and gave a quinine and iron ball. During this day a large slough came away from the horse's sheath. The animal was inclined to feed.

July 31st.—Horse greatly improved, moves freely, swellings almost disappeared; appetite much better. Up to this point he had almost entirely lived upon milk and eggs. During the next ten days the treatment was purely tonic and restorative, and at the end of the period alluded to the patient, which had then progressed most rapidly, was discharged convalescent.

Case II.—A bay harness mare, 10 years old, was the most severe of the quartette. When first seen on December 8th her head and limbs were enormously swollen. Serum was oozing from the nostrils, angles of the mouth, armpits and inside the thighs. She was moved only with the greatest pain and difficulty. I do not propose to repeat a daily record, as case I. gives a fair type of the action of the treatment under consideration, but it may briefly be stated that during her treatment this patient's temperature reached 106,° pulse 90, respiration 70.

On December 14th, six days from the commencement of the attack, the mare got a most acute attack of laryngitis and threatened suffocation. (Lest any skeptic should attribute this to the iodine, I would say at once that it occurred as the result of the box door being left accidentally open while a bitter east wind was blowing, and, further, that during the injections the animal's head was always supported on a man's shoulder until one felt sure that absorption had taken place. Beyond this it may be added that we have on occasion purposely lowered the head immediately after giving the last syringeful, the small quantity of solution then returned through the nostrils occasions only slight cough and inconvenience). I performed tracheotomy and inserted a tube. Independently of its immediate effect this operation subsequently saved the animal a considerable amount of annoyance, in that the whole of the remaining injections were given through its opening. This patient received in all 13 injections, in quantities varying from 8 to 18 drachms, administered

two daily at the commencement and one daily afterwards. Tonic treatment similar to that of case I was continued until December 29th, at which date the animal had made a good recovery.

Cases III and IV differed only from the preceding in their severity, their treatment being essentially similar. The latter received 5 injections, the former 15. The apparent anomaly in regard to the number of injections required by case III is explained by the fact that this animal was primarily stabled upon a quay, near which was a large sewer outlet, and where always at low tide was an acre or so of stinking mud. The owner was at first greatly disinclined to have his horse removed, but after two relapses readily consented.

The whole of these animals are now at work. It is perhaps worthy of remark that only case IV had received any treatment for influenza, the others had been allowed by their owners to take their chance until the purpura was noticed.

The solution used throughout was of the strength recommended in Mr. Dollar's article, viz., iodine one part, iodide of potassium five parts, water 100 parts. When carefully and slowly injected there is rarely any cough, and during the operation the patient frequently seems to be soothed almost into sleepiness.

I have endeavored only to give a bare outline of the treatment pursued, but it should be mentioned that careful nursing always played a prominent part in it. Milk and eggs were given very freely, and at the commencement supplied the staple subsistence. Warm supporting bandages were always put on the limbs and carried as high up as possible.

I gather from the experience gained in these cases that three or four large doses of iodine solution injected consecutively are more permanent in their effect, and hence more likely to prevent the relapses which are so frequent in this affection, than are five or six equally large doses given intermittently with small ones, or with any other medicine administered in the usual way.

A notable feature, too, is that fairly large doses of iodine, given either as pure iodine in a ball, or in any of the liquid

forms in a draught, are comparatively ineffectual when compared with the drug administered through the trachea.

A minor consideration is the corrosive action of the iodine upon one's syringe. If my belief in the future is warranted, a non-corrosive syringe (possibly of vulcanite) will become a desideratum.—*Vet. Record.*

COCAINE—ITS THERAPEUTICAL USES AND TOXICOLOGICAL EFFECTS.

In the March issue of the *Journal of Comparative Pathology and Therapeutics* Mr. F. Hobway published a long and excellent article on the above subject, where he reports a large number of experiments which he has made in studying the numerous and various effects of cocaine in the horse, dog and cat.

From the ninety-nine cases upon which he has experimented, he arrives at the following conclusions:

1. Cocaine hydrochlorate is a drug whose therapeutic value in certain cases is unquestionable, but its use on all animals is attended with danger unless proper care is taken to estimate the amount which can be used with safety.

2. It is a drug which can readily be absorbed from subcutaneous, serous or mucous tissues, and it is of value as a local anæsthetic in surgery and in certain affections of the stomach.

In surgery there is danger of interference with the operation if too large a dose (although not toxic), be given, on account of the violent involuntary clonic spasms of the voluntary muscles.

3. The doses which can be used with effect and at the same time with safety are:

For the horse, subcutaneously, not more than ten or eleven grains.

For the dog, subcutaneously, not more than two grains of cocaine hydrochlor., if about the size of a fox terrier, or four grains, if of the size of a collie. By the mouth, the toxic dose is much larger, but the purpose is effected by doses varying from one to four grains.

In cats, and delicate breeds of dogs, much greater caution must be used, and certainly not more than from one-half grain to one grain can be employed, subcutaneously, with safety, whilst by the mouth, the same dose is also advisable and can be repeated every four hours for at least three or four times. (One grain of cocaine is almost the same as mxxx of a four per cent., or mx of a ten per cent. aqueous solution).

4. The first symptom of danger is great uneasiness, followed by a violent involuntary clonic spasm of the voluntary muscles of the body, particularly noticeable in the muscles of the jaws and limbs.

5. If a diseased condition of the heart or lungs (particularly the latter) be suspected, much greater care must be observed and the minimum doses allowed.

6. The anæsthetic effect is manifested only locally and does not extend to the deeper tissues. It only extends around the seat of inoculation for a space varying from one-half an inch to an inch and one-half.

This local anæsthesia is manifested in from three to five minutes and lasts about twenty to twenty-five minutes.

7. Toxic doses, subcutaneously, allowing for idiosyncrasies are: for the dog, from grs. iii. (for an animal of the size and weight of a fox terrier) to grs. vi. (for an animal the size of a collie); for the cat, from grs. ii. to iv.

If a large medicinal dose or a toxic dose be given, the symptoms produced are: in a few minutes (2 to 4 minims if subcutaneously given) the animal becomes unusually quiet unless disturbed; there is constant licking of the lips (a peculiar smacking sound very frequently can be noticed), increased flow of thin watery saliva, which collects at the back of the pharynx and around the lips (dribbling from them, sometimes interfering with the act of respiration and causing constant gulping and apparently a choking sensation). The animal is very sensitive to all sounds and very attentive when spoken to; the ears are alternately pricked up and moved backwards and forwards; this hyperæsthesia may amount even to frenzy, and the animal may strangle itself at the end of the cord or chain by which it is secured, by con-

stantly twisting round and so shortening it. Again, this will sometimes cause (in the dog) the animal to make attempts to hide itself. The next stage is uneasiness, followed by very violent clonic involuntary spasms of all the voluntary muscles of the body, particularly noticeable in those of the jaws and limbs. These spasms commence in from ten to twenty minutes after an overdose has been given; although, if a large toxic dose has been administered they will appear as soon as two or three minutes. The spasms occur about every fifteen seconds and rapidly exhaust the system; the animal appears to be quite unconscious.

9. Hypodermic injections of morphia or amyl-nitrite certainly diminish the violence of the spasms, but are not actual and safe antidotes.

10. The effect on the respiratory centre is first to stimulate it, causing accelerations, then to depress and paralyze it. On the circulatory system the effect is not very violent, the pulse being only somewhat slightly increased in frequency; the heart continues to beat for a short time after the respiratory movements have ceased.

11. On the brain and nervous system the effect is very marked, being first that of a stimulant and then that of a depressant and paralyzer.

12. The action of the sensory nerves is much increased, whilst the effect on motor tracts is not to be forgotten.

13. The effect on the body temperature.—Toxic doses very markedly increase the temperature, in some cases even as much as 3 or 4 degrees; this is not constant or persistent, as in some cases it will be observed that the temperature falls again, even below normal.

14. The effect on the pupil of the eye is that of a mydriatic, but unless a large dose be given the mydriatic effect is not very well marked in the dog; in the cat it is much better seen.

15. On the skin, its action in toxic doses is certainly that of a diaphoretic.

16. On the salivary glands and the secretions of the mouth both medicinal and toxicological doses in the dog produce

markedly increased action. This is apparently increased by the violent clonic spasms of the muscles of the jaws.

17. On the sphincters of the bladder and rectum, its effect is not well marked in the dog or cat; increased peristalsis in the horse is, however, distinctly marked.

18. Locally applied, it has no irritant action, nor does it leave any trace.

19. On the voluntary muscles toxic or excessive doses have the effect of producing violent clonic spasms.

Medicinally, cocaine is of use; *internally*, as a gastric sedative in cases of persistent vomiting and in cases where it is desirable to produce a temporary loss of appetite; *subcutaneously*, as a local anæsthetic, an aid to diagnosis in some diseases and for certain surgical operations, and as a nerve stimulant; *externally*, as a local anæsthetic and as an antigalactogal in cases where there is congestion and pain in the mammary glands. Death is produced either by exhaustion or by paralysis of the respiratory centre and respiratory arrest; it may occur from five to ten minutes or from five to six hours, according to the amount given.

Fresh solutions, not more than ten days old, are only to be used, as otherwise the results are often disappointing.

SOCIETY MEETINGS.

NEW YORK STATE BOARD OF VETERINARY EXAMINERS.*

The second meeting of the Board of Veterinary Examiners, Regents of the State of New York, was held in New York, Friday evening, September 6th,—the entire Board present: Professor Law, President; Dr. W. H. Kelly, Secretary; Drs. Hinkley, Huidekoper, and Morris. After consideration of the colleges to be recognized by the Board of Regents of New York State, it was unanimously decided that

*We copy the above report from the October number of the *Journal of Comparative Medicine and Veterinary Archives*. Why the REVIEW did not receive the official report of the secretary is not known to us. Has the Board added "prejudice" to "bias?"

the following are properly equipped and give the necessary three-years' instruction by a full staff of veterinary instructors:

The New York College of Veterinary Surgeons, New York City.

The American Veterinary College, New York City.

The Veterinary Department of the University of Pennsylvania, Philadelphia.

The School of Veterinary Medicine, Harvard College, Boston, Mass.

The McKillip Veterinary College, Chicago, Ill.

The Veterinary College at Ames, Iowa.

The School of Comparative Medicine of McGill University, Montreal, Canada.

All veterinary colleges under government control in the continental countries of Europe.

All veterinary colleges in Great Britain and Ireland whose students are licensed by the Royal College of Veterinary Surgeons.

The Board then proceeded with the selection of questions for the first examinations, September 24th to 27th, at New York, Albany, Syracuse, and Buffalo, which were placed under seal and forwarded to the Board of Regents.

W. H. KELLY, Secretary.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The September meeting of this Association was called to order by President Lintz, at the office of Dr. W. H. Hoskins, Tuesday evening, September 17, 1895, when Hoskins, J. R. Hart, Lintz, Rhoads and McAmbly answered roll call. A communication from Dr. Bridge was read expressing regret at his inability to be present, having been called to Robesonia.

Dr. Hoskins, as chairman of the Legislative Committee, reported very little excitement since our last meeting, as the State Veterinarian or the Board of State Veterinary Medical Examiners had not been appointed.

At the request of the Treasurer and Secretary, the Presi-

dent appointed Hart and Hoskins a committee to audit the books for the past year.

Dr. J. R. Hart, who was the Association delegate to Cresson, gave a very interesting account of the meeting, which was very entertaining and instructive, and worthy of a much larger audience, as the papers read were of a high order.

Dr. Hoskins, as delegate to the Des Moines meeting, credited it with being the largest convention the Association had ever held. He gave a glowing account of the reception and entertainment offered at Chicago. This, with his full though concise description of the meeting, banquet, etc., made the mouth of the poor stay-at-home water, practically as well as figuratively speaking, and they all determined their watchword for next year would be "On to the national meeting."

The meeting adjourned to meet Tuesday evening, October 8, 1895, at Broad and Filbert streets, when officers for the ensuing year will be elected.

The October meeting of the Association was called to order by President Lintz, at the new and more commodious quarters on the northwest corner of Broad and Filbert streets, Tuesday evening, the 8th inst., at 8:30.

The change of location was made imperative, as the increase in attendance both of members and visitors had outgrown the very pleasant environments of Dr. Hoskins' office.

The members present were Drs. F. Bridge, H. Eves, Chas. T. Goentner, W. H. Hoskins, J. R. Hart, W. S. Kooker, Chas. Lintz, W. L. Rhoads and L. Pearson. Dr. Allen was also present.

Dr. Hoskins, as chairman of the Legislative Committee, reported having received several communications from veterinarians now located in other States who wish to locate here and write to learn what laws they must comply with.

Dr. Hart, as chairman of the Auditing Committee, reported the accounts satisfactory and the treasury in a position to pay a dividend. The revision of the Constitution and By-Laws to better meet the present and future needs of the Asso-

ciation was now considered, and after considerable discussion it was adopted as revised.

Dr. Hoskins read a very interesting paper entited, "What I have Learned in Associations"; he thus brought out many pungent truths which more clearly portrayed the inestimable worth of the Association as a factor for the advancement and protection of veterinary science, also the personal advantages to the individual member.

Dr. Eves reported a case of excessively contracted flexor tendons in colt, one month old; this elicited considerable discussion and much valuable information.

Dr. Allen cited a case of farcy which had been tested with malleine; he promised to give a detailed account of it at the next meeting. This brought into discussion the reliability of malleine as a diagnostic agent; it was maintained by a majority present that on account of the variations in its manufacture it was not as a rule absolutely satisfactory, while tuberculine was held in higher repute than ever before, Prof. Nocard claiming a universal accuracy, while the Massachusetts Commission claim less than one half per cent of mistakes with its use.

This being the annual meeting the nomination and election of officers for the ensuing year was now in order. There being but one nominee for each office, the secretary was instructed to cast the ballot and the election was declared unanimous as follows: President, John R. Hart; Vice-President, W. S. Kooker; Treasurer, F. Bridge; Secretary, W. L. Rhoads; Directors, H. Eves, C. T. Goentner, Chas. Lintz, L. Pearson, W. H. Hoskins.

After the new officers had assumed their duties the meeting adjourned to meet at the same place, Tuesday evening, November 12, 1895. W. L. RHOADS, Secretary.

MONTREAL VETERINARY MEDICAL ASSOCIATION.

The twenty-first annual opening meeting of the Montreal Veterinary Medical Association was held in the library of the Faculty of Comparative Medicine, on Thursday evening, October 10, 1895, with the President, Dr. Adami, in the chair.

There was a good attendance of members and candidates for admission.

Minutes of last meeting were read and approved.

The special business of the meeting was the election of officers for the ensuing year. The honorary president, Dr. D. McEachran took the chair and the ballot resulted in the election of the following: President, Dr. M. C. Baker; 1st Vice-President, Dr. N. D. Gunn; 2d Vice-President, Mr. E. C. Thurston; Secretary-Treasurer, Harri H. Dell; Librarian, Mr. J. A. Ness.

Fourteen new members were added to the roll and Dr. Martin, professor of pathology, was elected to honorary membership.

Dr. Adami referred to the admirable condition of the library, which was largely due to the zeal and energy of Mr. Thurston, the retiring librarian.

A Reporting Committee was appointed, consisting of Messrs. F. Kee and S. C. Richards, to act with the Secretary in communicating reports of the meetings to the various professional journals.

Dr. Baker thanked the Association for the honorable position to which they had called him and outlined the work for the year.

Dr. Adami assured the members of his continued interest in the work of the Association.

Messrs. Greer and McCarrey were instructed to procure material for experimental purposes, and the essayists for the next meeting appointed, after which the meeting adjourned.

HARRI H. DELL, Sec'y-Treas.

INDIANA ASSOCIATION OF VETERINARY GRADUATES.

The semi-annual meeting was held in Marion, July 9 and 10, 1895, Dr. J. E. Cloud, Richmond, in the chair. Members present: C. F. Bell, Kokomo; F. A. Bosler, New Castle; J. W. Klotz, Noblesville; W. B. Wallace, Marion; F. W. Anderman, Hartford City; O. L. Boor, Muncie; J. C. Rodger, Anderson; visitor, G. L. Simon, Marion.

The minutes of the previous meeting were read and approved. On motion, Dr. G. L. Simon was proposed and elected to membership. The Committee on Legislation made their report and were continued. A paper was then read by Dr. J. W. Klotz on "Ovariotomy," which was well received by the members, and a good discussion followed.

Adjourned untfl 9 A.M., July 10th. At the hour named the meeting was called to order by the President in the chair. A paper was then read by Dr. R. F. Bell, written by Dr. H. R. Macaulay, of Indianapolis (who was absent), on "Pleurisy and its Sequels," which was well written, and showed that the writer was familiar with the diseases of the lungs. A good discussion followed. On motion, the resignation of Dr. J. H. Honan, of Hammond, was accepted, as the doctor having graduated from a Chicago medical college had decided to practice on the human subject, all the members wishing him success in his new sphere. On motion the resignation of Ex-State Veterinarian C. M. Stull was accepted, as the doctor is thinking of changing his professional card. A vote of thanks was tendered Dr. W. B. Wallace for the kindly manner in which he had entertained the members of the Association. On motion, the meeting adjourned to meet in Muncie, December 10 and 11, 1895.

BIBLIOGRAPHY.

LES VACHES LAITIERES (Milching Cows) choice, keeping, production, breeding, diseases, products. By E. THIERRY, Professor of Zootechny and Director of the School of Practical Agriculture of Yonne. 1 vol., 16mo., 349 pages, with 75 illustrations. J. B. BAILLIERE a fils, 19 rue Hautefeuille, Paris.

This new French work contains all that can be of interest to the owners of milch cows.

The work begins with brief notice of the anatomy and physiology of bovines and the principles for telling the age. This is followed by the consideration of the principal French and foreign breeds used principally for the production of milk; this, with the selection of the cows and their improvement, being presented in the following chapter. The hygiene

of the milch cow is treated at length, to the point of view of the stabling and the cleaning, as well as to that of feeding in the stables or in the field. After treating of the milking, and the various causes that may act upon the production of milk, the author enters into long considerations upon all that relates to the reproduction of the breeds and its breeding, with some practical advice upon the purchase of the milch cow. Diseases of the cow and of the calf form a short chapter, and which is followed to the end of the book by a study of the milk, of the dairy and of the various milk industries. This work is particularly useful to breeders as well as to veterinarians.

OBITUARY.

RODERICK ALEXANDER McLEAN, D.V.S.

Born at Inverness, Scotland, in 1856, he came to this country when a young man, and matriculated at the American Veterinary College in 1876, graduating in 1879, when he won the gold medal of his class for the best general examination. He served as house surgeon at the college hospital for one year, and then became associated with his father, Lachlan McLean, M.R.C.V.S., in the practice of his profession, in Brooklyn.

Contagious pleuro-pneumonia among dairy cattle being very prevalent on Long Island and most of the Eastern States at this time, he was appointed upon Gen. Patrick's staff for the suppression of this disease, in which capacity he served for two years, after which he was connected with the Bureau of Animal Industry.

After pleuro-pneumonia had been stamped out and the prevalence of tuberculosis among cattle had been realized, Dr. McLean was again called upon, and became connected with the State Board of Health for the suppression of this disease. He was Assistant Veterinary Inspector to the Brooklyn Board of Health for a long time, Veterinary Surgeon to the Brooklyn Branch of the American Society for the Prevention of Cruelty to Animals. He also found time to attend the meetings of the various veterinary medical so-

cieties and associations, served on the *Comitia Minora*, and many other important committees of the U. S. Veterinary Medical Association, and was president of the New York State Vet. Med. Society at one time. As an association member, probably no one was more energetic, more zealous, or worked harder for the elevation and general interest of our profession than he, and his genial disposition, his honorable and fearless conduct, his thorough knowledge of all matters pertaining to his profession, and his fluency of speech in debate, made him one of the best known and most respected veterinarians in the country.

He died at the residence of his father, No. 549 Dean St., Brooklyn, on Thursday, Sept. 24, after a lingering illness, and only 39 years of age. The interment took place in the family plot in Greenwood Cemetery, on Sunday morning, attended by none but the family and a few professional friends. Professors Liautard, Robertson and Coates of the American Veterinary College, and Drs. Rose of New York, McKee of Staten Island, and Berns of Brooklyn, acting as pall bearers, and Dr. Chas. Burden of New York officiating as chaplain.

JOHN DUANE, JR.

John Duane, Jr., D.V.S., died in the early part of October, in New York City. Graduated at the American Veterinary College (Class 1881), he practiced his profession but a short time and then entered politics. He served for several years as chief clerk in one of the judicial courts of his native city.

CORRESPONDENCE.

LA SALLE, ILL., Oct. 15, 1895.

To "Exchange," 141 W. 54th St., New York City:

In the September AMERICAN VETERINARY REVIEW is your advertisement desiring to exchange practice with some one. I would like to know where the station is, how much outside practice there is each year—are you allowed anything besides quarters, light and fuel, etc., etc., in fact everything minntely in regard to the situation. Have you the authority

to install another in your position? Perhaps he would be bounced as soon as installed.

I have a friend in the army at Fort Leavenworth, Kas., that gets $125 a month, house, light, fuel, rations—in fact, everything but clothes. Is furnished with instruments, books, medicines and everything pertaining to his business, also allowed one or two saddle horses for his own use, a chance to keep a cow, etc. Perhaps you think I am looking for a snap! Well, the fact of it is, I have a good practice here and would want something pretty good before I would be tempted to leave. But as I always had a fascination for the army, and am very fond of hunting, I thought I would write and learn the particulars.

I would want as good a thing as my friend at Fort Leavenworth, to tempt me to leave here, as I have been here over eight years and have a great many friends and have bought property. It may be time thrown away, but thought I would write and learn the particulars. It will do no harm even if nothing more is done. Yours respectfully,

C. E. HOLLINGSWORTH.

AN INQUIRY.

To "Exchange":

In AMERICAN VETERINARY REVIEW (September 1, 1895) in regard to trading a position of army veterinary for a local practice, I would like very much to know where that location is, as I am thinking of trading my practice for one in a more arid region. Hoping to be put into communication of "Exchange," I remain,

Yours very respectfully,

DR. J. S. MEYER.

FOR SALE.

An old established veterinary practice in one of the largest and best cities in the United States, returns upwards of $6,000 per annum. To a man of experience, good manners, and address, this is a fine opening. It would also suit two bright, energetic young practitioners, possessing the necessary qualifications.

Address "Practice," care the AMERICAN VEVERINARY REVIEW.